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<b>(21) International Application Number:</b> PCT/US00/05882 <b>(22) International Filing Date:</b> 8 March 2000 (08.03.00)  <b>(30) Priority Data:</b> 60/124,270                      12 March 1999 (12.03.99)                      US  <b>(71) Applicant (for all designated States except US):</b> HUMAN GENOME SCIENCES, INC. [US/US]; 9410 Key West Avenue, Rockville, MD 20850 (US).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> ROSEN, Craig, A. [US/US]; 22400 Rolling Hill Road, Laytonsville, MD 20882 (US). RUBEN, Steven, M. [US/US]; 18528 Heritage Hills Drive, Laytonsville, MD 20882 (US).  <b>(74) Agents:</b> WALES, Michele, M. et al.; Human Genome Sciences, Inc., 9410 Key West Avenue, Rockville, MD 20850 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> HUMAN CANCER ASSOCIATED GENE SEQUENCES AND POLYPEPTIDES  <b>(57) Abstract</b>  This invention relates to newly identified tissue specific cancer associated polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "cancer antigens", and to the complete gene sequences associated therewith and to the expression products thereof, as well as the use of such tissue specific cancer antigens for detection, prevention and treatment of tissue specific disorders, particularly the presence of cancer. This invention relates to the cancer antigens as well as vectors, host cells, antibodies directed to cancer antigens and recombinant and synthetic methods for producing the same. Also provided are diagnostic methods for diagnosing and treating, preventing and/or prognosing tissue specific disorders, including cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of cancer antigens of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and/or function of the polypeptides of the present invention.		



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## **Human Cancer Associated Gene Sequences and Polypeptides**

### **5    *Field of the Invention***

This invention relates to newly identified tissue specific cancer associated polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "cancer antigens," and to the complete gene sequences associated therewith and to the expression products thereof, as well as the use of such cancer antigens for detection, prevention and treatment of tissue specific diseases, particularly cancers. This invention relates to the cancer antigens as well as vectors, host cells, antibodies directed to cancer antigens and recombinant and synthetic methods for producing the same. Also provided are diagnostic methods for diagnosing and treating, preventing and/or prognosing disorders related to tissue specific diseases, including cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of cancer antigens of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and/or function of the polypeptides of the present invention.

### **20    *Background of the Invention***

Cell growth is a carefully regulated process which responds to specific needs of the body. Occasionally, the intricate, and highly regulated controls dictating the rules for cellular division break down. When this occurs, the cell begins to grow and divide independently of its homeostatic regulation resulting in a condition commonly referred to as cancer. In fact, cancer is the second leading cause of death among Americans aged 25-44.

Cancers or malignant tumors are characterized by continuous cell proliferation and cell death. Cancer cells have been shown to exhibit unique gene expression, and dozens of cancer-specific genetic markers, tumor antigens, have been identified. P35B, a tumor rejection antigen, was first identified in mouse. A point mutation in the P35B gene elicits a cytolytic T lymphocyte response but no detectable antibody response (Szikora, J. P. et al. (1990) EMBO J. 9:1041-1050). A human homolog of P35B, FX, is a homodimeric

NADP(H)-binding protein of 68 kDa. FX acts as a combined epimerase and NADPH-dependent reductase in converting GDP-4-keto-6-D-deoxymannose to GDP-L-fucose (Tonetti, M. et al. (1996) J. Biol. Chem. 271: 27274-27279). GDP-L-fucose is the substrate of several fucosyl-transferases involved in the biosynthesis of blood group ABH antigenic  
5 determinants. GDP-L-fucose is also utilized in synthesizing fucosylated glycoproteins and glycolipids which function in cell adhesion and recognition (Springer, T. A. and Lasky, L. A. (1991) Nature 329: 196-197; Brandley, B. K. et al. (1990) Cell 63: 861-863; and Feizi, T. and Childs, R. A. (1987) Biochem. J. 245: 1-11).

Thus, there is a need for the identification and characterization of novel tissue specific  
10 polynucleotides and polypeptides which modulate activation and differentiation of cells, both normally and in disease states. In particular, there is a need to isolate and characterize additional molecules that mediate apoptosis, DNA repair, tumor-mediated angiogenesis, genetic imprinting, immune responses to tumors and tumor antigens and, among other things, that can play a role in detecting, preventing, ameliorating or correcting dysfunctions or  
15 diseases.

### *Summary of the Invention*

The present invention includes isolated nucleic acid molecules comprising, or alternatively, consisting of, a cancer associated polynucleotide sequence disclosed in the  
20 sequence listing (as SEQ ID NOs: 1 to 842) and/or contained in a human cDNA clone described in Tables 1, 2 and 5 and deposited with the American Type Culture Collection ("ATCC"). Fragments, variant, and derivatives of these nucleic acid molecules are also encompassed by the invention. The present invention also includes isolated nucleic acid molecules comprising, or alternatively consisting of, a polynucleotide encoding a cancer  
25 polypeptide. The present invention further includes cancer polypeptides encoded by these polynucleotides. Further provided for are amino acid sequences comprising, or alternatively consisting of, cancer polypeptides as disclosed in the sequence listing (as SEQ ID Nos: 843 to 1684) and/or encoded by a human cDNA clone described in Tables 1, 2 and 5 and deposited with the ATCC. Antibodies that bind these polypeptides are also encompassed by the  
30 invention. Polypeptide fragments, variants, and derivatives of these amino acid sequences are also encompassed by the invention, as are polynucleotides encoding these polypeptides and antibodies that bind these polypeptides. Also provided are diagnostic methods for diagnosing

and treating, preventing, and/or prognosing disorders related to cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of cancer antigens of the invention.

## 5 *Detailed Description*

### Tables

Table 1 summarizes some of the cancer antigens encompassed by the invention (including contig sequences (SEQ ID NO:X) and the cDNA clone related to the contig  
 10 sequence) and further summarizes certain characteristics of the cancer polynucleotides and the polypeptides encoded thereby. The first column shows the "SEQ ID NO:" for each of the 842 cancer antigen polynucleotide sequences of the invention. The second column provides a unique "Sequence/Contig ID" identification for each cancer associated sequence. The third column, "Gene Name," and the fourth column, "Overlap," provide a putative identification  
 15 of the gene based on the sequence similarity of its translation product to an amino acid sequence found in a publicly accessible gene database and the database accession no. for the database sequence having similarity, respectively. The fifth and sixth columns provide the location (nucleotide position nos. within the contig), "Start" and "End", in the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred ORF shown in the sequence listing as  
 20 SEQ ID NO:Y. The seventh and eighth columns provide the "% Identity" (percent identity) and "% Similarity" (percent similarity), respectively, observed between the aligned sequence segments of the translation product of SEQ ID NO:X and the database sequence. The ninth column provides a unique "Clone ID" for a cDNA clone related to each contig sequence. The tenth column shows the tissue in which each SEQ ID NO:X is predominantly expressed.

25 Table 2 summarizes ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application.

Table 3 indicates public ESTs, of which at least one, two, three, four, five, ten, fifteen or more of any one or more of these public EST sequences are optionally excluded from certain embodiments of the invention.

30 Table 4 lists residues comprising antigenic epitopes of antigenic epitope-bearing fragments present in most of the cancer associated polynucleotides described in Table 1 as predicted by the inventors using the algorithm of Jameson and Wolf, (1988) Comp. Appl.

Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). Cancer associated polypeptides (e.g., SEQ ID NO:Y, polypeptides encoded by SEQ ID NO:X, or polypeptides encoded by the cDNA in the referenced cDNA clone) may possess one or more antigenic epitopes comprising residues described in Table 4. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. The residues and locations shown in column two of Table 4 correspond to the amino acid sequences for most cancer associated polypeptide sequence shown in the Sequence Listing.

Table 5 shows the cDNA libraries sequenced, and ATCC designation numbers and vector information relating to these cDNA libraries.

#### **Definitions**

The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide/sequences of the present invention.

As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence contained in SEQ ID NO:X (as described in column 1 of Table 1) or the related cDNA clone (as described in column 9 of Table 1 and contained within a library deposited with the ATCC). For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence.

Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

5 In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown in column 9 of Table 1, each clone is identified by a cDNA Clone ID. Each Clone ID is unique to an individual clone and the  
10 Clone ID is all the information needed to retrieve a given clone from the HGS library. In addition to the individual cDNA clone deposits, most of the cDNA libraries from which the clones were derived were deposited at the American Type Culture Collection (hereinafter "ATCC"). Table 5 provides a list of the deposited cDNA libraries. One can use the Clone ID to determine the library source by reference to Tables 2 and 5. Table 5 lists the deposited  
15 cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone ("Clone ID") isolated from that library begins with the same four characters, for example "HTWEP07". As mentioned below, Table 1 correlates the Clone ID names with SEQ ID NOs. Thus, starting with a SEQ ID NO, one can use Tables 1, 2 and 5 to determine the corresponding Clone ID,  
20 from which library it came and in which ATCC deposit the library is contained. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for  
25 the purposes of patent procedure.

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), and/or sequences contained in the  
30 related cDNA clone within a library deposited with the ATCC. "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH

7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

Also included within "polynucleotides" of the present invention are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency); salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH<sub>2</sub>PO<sub>4</sub>; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 ug/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA<sup>+</sup> sequences (such as any 3' terminal polyA<sup>+</sup> tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).

The polynucleotides of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the

polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

"SEQ ID NO:X" refers to a tissue specific cancer antigen polynucleotide sequence described in Table 1. SEQ ID NO:X is identified by an integer specified in column 1 of Table 1. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. There are 842 cancer antigen polynucleotide sequences described in Table 1 and shown in the sequence listing (SEQ ID NO:1 through SEQ ID NO:842). Likewise there are 842 polypeptide sequences shown in the sequence listing, one polypeptide sequence for each of the polynucleotide sequences (SEQ ID NO:843 through SEQ ID NO:1684). The polynucleotide sequences are shown in the sequence listing immediately followed by all of the polypeptide sequences. Thus, a polypeptide sequence corresponding to polynucleotide sequence SEQ ID NO:1 is the first polypeptide sequence shown in the sequence listing. The second polypeptide sequence corresponds to the polynucleotide sequence shown as SEQ ID NO:2, and so on. In other words, since there are 842 polynucleotide sequences, for any polynucleotide sequence SEQ ID NO:X, a corresponding polypeptide SEQ ID NO:Y can be determined by the formula  $X + 842 = Y$ . In addition, any of the unique "Sequence/Contig ID" defined in column 2 of Table 1, can be linked to the corresponding polypeptide SEQ ID NO:Y by reference to Table 4.



The polypeptides of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth Enzymol 182:626-646 (1990); Rattan et al., Ann NY Acad Sci 663:48-62 (1992).)

The cancer polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below). It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple  
5 histidine residues, or an additional sequence for stability during recombinant production.

The cancer polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified using techniques described herein or otherwise known in the art, such as, for example, by the one-  
10 step method described in Smith and Johnson, Gene 67:31-40 (1988). Polypeptides of the invention also can be purified from natural, synthetic or recombinant sources using techniques described herein or otherwise known in the art, such as, for example, antibodies of the invention raised against the polypeptides of the present invention in methods which are well known in the art.

15 By a polypeptide demonstrating a "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein of the invention. Such functional activities include, but are not limited to, biological activity, antigenicity [ability to bind (or compete with a polypeptide for binding) to an anti-polypeptide antibody], immunogenicity (ability to generate antibody which binds to  
20 a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide.

"A polypeptide having functional activity" refers to polypeptides exhibiting activity similar, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular assay, such as, for example, a biological  
25 assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than  
30 about three-fold less activity relative to the polypeptide of the present invention).

The functional activity of the cancer antigen polypeptides, and fragments, variants derivatives, and analogs thereof, can be assayed by various methods.

For example, in one embodiment where one is assaying for the ability to bind or compete with full-length polypeptide of the present invention for binding to an antibody to the full length polypeptide antibody, various immunoassays known in the art can be used, including but not limited to, competitive and non-competitive assay systems using techniques  
5 such as radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoradiometric assays, gel diffusion precipitation reactions, immunodiffusion assays, in situ immunoassays (using colloidal gold, enzyme or radioisotope labels, for example), western blots, precipitation reactions, agglutination assays (e.g., gel agglutination assays, hemagglutination assays), complement fixation assays,  
10 immunofluorescence assays, protein A assays, and immunoelectrophoresis assays, etc. In one embodiment, antibody binding is detected by detecting a label on the primary antibody. In another embodiment, the primary antibody is detected by detecting binding of a secondary antibody or reagent to the primary antibody. In a further embodiment, the secondary antibody is labeled. Many means are known in the art for detecting binding in an  
15 immunoassay and are within the scope of the present invention.

In another embodiment, where a ligand is identified, or the ability of a polypeptide fragment, variant or derivative of the invention to multimerize is being evaluated, binding can be assayed, e.g., by means well-known in the art, such as, for example, reducing and non-reducing gel chromatography, protein affinity chromatography, and affinity blotting. See  
20 generally, Phizicky, E., et al., Microbiol. Rev. 59:94-123 (1995). In another embodiment, physiological correlates polypeptide of the present invention binding to its substrates (signal transduction) can be assayed.

In addition, assays described herein (see Examples) and otherwise known in the art may routinely be applied to measure the ability of polypeptides of the present invention and  
25 fragments, variants derivatives and analogs thereof to elicit polypeptide related biological activity (either in vitro or in vivo). Other methods will be known to the skilled artisan and are within the scope of the invention.

### 30 **Cancer Associated Polynucleotides and Polypeptides of the Invention**

It has been discovered herein that the polynucleotides described in Table I are expressed at significantly enhanced levels in human cancer tissues as shown in column 10 of

Table 1. Accordingly, such polynucleotides, polypeptides encoded by such polynucleotides, and antibodies specific for such polypeptides find use in the prediction, diagnosis, prevention and treatment of tissue specific disorders, including cancer as more fully described below.

Table 1 summarizes some of the polynucleotides encompassed by the invention  
5 (including contig sequences (SEQ ID NO:X) and the related cDNA clones) and further summarizes certain characteristics of these tissue specific cancer associated polynucleotides and the polypeptides encoded thereby.

Table 1

Seq ID Contig ID No.	Sequence/	Gene Name	Overlap	HGS Nucleotide Start End	% Identity	% Similarity	Clone ID	Tissue(s)
1	507291	uvomorulin [Homo sapiens] >sp Q15855 Q15855 UVOMORULIN PRECURSOR (E-CADHERIN) (ARC-1/UVOMORULIN). >gi 930046 uvomorulin (140 AA) [Homo sapiens]  SUB 168-307; Length = 878	gi 340185	2 475	100	100	HC14AU23	Pancreas, Breast/Ovarian
2	508000	HLA-B-associated transcript 2 (BAT2) [Homo sapiens] >gi 179345 HLA-B-associated transcript 2 (BAT2) [Homo sapiens] >pir B35098 B35098 MHC class II histocompatibility antigen HLA-B- associated transcript 2 - human >sp P48634 BAT2_HUMAN LARGE PROLINE- RICH P	gi 179339	100 1902	86	87	HWAAK56	Lung, Breast/Ovarian
3	518325			110 310			HHFCP36	Lung, Pancreas, Colon, Breast/Ovarian
4	523111	Sm D2 [Homo sapiens] >pir 38861 38861 small nuclear ribonucleoprotein chain D2 - human Length = 118	gi 600748	233 670	88	88	HA1AE67	Lung, Breast/Ovarian
5	526869	(AC002291) Similar ATP-dependent RNA Helicase [Arabidopsis thaliana] >sp O49289 O49289 SIMILAR ATP-DEPENDENT RNA HELICASE. Length = 845	gi 2829912	1 552	67	77	HT4EP57	Pancreas, Breast/Ovarian
6	532211	retinoic acid-binding protein [Bos taurus] Length = 138	gi 162906	2 481	95	98	HHGCV63	Lung, Breast/Ovarian

7	532247		160	384		HEBCC47	Pancreas, Breast/Ovarian Lung, Breast/Ovarian
8	537932	alcohol dehydrogenase [Homo sapiens] >gil178134 alcohol dehydrogenase 3 [Homo sapiens] >pir JH0789 DEHUC2 alcohol dehydrogenase (EC 1.1.1.1) 5 - human >sp P11766 ADHX_HUMAN ALCOHOL DEHYDROGENASE CLASS III CHI CHAIN (EC 1.1.1.1) (GLUTATHIONE- DEPENDENT FOR	gil178130	1	1149	92	HUS1B86
9	540117		174	635		HRG13U25	Lung, Breast/Ovarian
10	547710	transketolase [Homo sapiens] Length = 623	gil1297297	2	1189	92	HN1UA227
11	551747	rtvp-1 [Homo sapiens] >pir C5308 UC5308 testis- specific, vespid. and pathogenesis-related protein 1 - human >sp P48060 GLIP_HUMAN GLIOMA PATHOGENESIS-RELATED PROTEIN (RTVP-1 PROTEIN). Length = 266	gil1030053	26	931	91	HTDAE10
12	552799	delta- aminolevulinate synthase (housekeeping) [Homo sapiens] >pir S13682 SYHUAL 5- aminolevulinate synthase (EC 2.3.1.37) 1 precursor - human >sp P13196 HEM1_HUMAN 5- AMINOLEVULINIC ACID SYNTHASE MITOCHONDRIAL PRECURSOR. NONSPECIFIC (EC 2.3.1.37) (DELTA-AM	gil28583	104	814	100	HHHCX90

13	553243	RING7 [Homo sapiens] >gi 557702 HLA-DMB [Homo sapiens] >gi 512472 HLA-DMB [Homo sapiens] >gi 1054742 DMB [Homo sapiens] >pir 37533 37533 MHC class II histocompatibility antigen HLA-DM beta chain precursor - human Length = 263	gi 313002	202	1017	93	93	HUKD144	Lung, Pancreas
14	553368	(AF053944) aortic carboxypeptidase-like protein ACLP [Homo sapiens] >sp G32889 G32889 6 AORTIC CARBOXYPEPTIDASE-LIKE PROTEIN ACLP. >gnl PID d101378  AEBP1 [Homo sapiens] ;SUB 314-1158; Length = 1158	gi 3288916	1	459	96	96	HADGE84	Lung, Pancreas
15	554349								
16	558491	immunoglobulin heavy chain [Homo sapiens] Length = 152	gi 567128	3	776	98	100	HUSCK19 HUFEN61	Lung, Pancreas Lung, Pancreas, Colon
17	558983	dl6802.2 [Homo sapiens] >sp P35579 MYSN_HUMAN MYOSIN HEAVY CHAIN, NONMUSCLE TYPE A (CELLULAR MYOSIN HEAVY CHAIN, TYPE A) (NMMHC-A). >gi 553596 cellular myosin heavy chain [Homo sapiens] ;SUB 1-1337; Length = 1960	gnl PID c1294465	219	623	100	100	HCHBM82	Pancreas, Breast/Ovarian
18	572943			367	522			HBAMC47	Pancreas, Breast/Ovarian
19	585892	epithelial tumor antigen precursor, membrane-bound form - human Length = 515	pir S10572 S10572	3	965	89	89	HUKAL69	Lung, Pancreas, Colon, Breast/Ovarian

20	589390	C1 inhibitor [Homo sapiens] >gi29535 C1 inhibitor [Homo sapiens] >pirS15386/ITHUC1 complement C1 inhibitor precursor - human >spP05155/IC1_HUMAN PLASMA PROTEASE C1 INHIBITOR PRECURSOR (C1INH). >gnl PID e3783 C1 inhibitor (AA 155-478) (1 is 2nd base i	gnl PID e222400	3	983	96	96	HSRA1B10	Lung, Pancreas
21	596882			800	1057			IMCEP91	Lung, Pancreas, Colon
22	616289	nucleoporin p58 [Rattus norvegicus] >spP70581/P70581 NUCLEOPORIN P58. Length = 585	gij1537068	1	390	67	70	HAIJB44	Lung, Pancreas
23	622140	selenophosphate synthetase 2 [Homo sapiens] >spQ99611/Q99611 SELENOPHOSPHATE SYNTHETASE 2. Length = 448	gij1815622	92	325	97	97	HEONC67	Pancreas, Breast/Ovarian
24	623566	karyopherin alph 3 [Homo sapiens] >spO00505/IMA3_HUMAN IMPORTIN ALPHA-3 SUBUNIT (KARYOPHERIN ALPHA-3 SUBUNIT). Length = 521	gnl PID d1021210	66	1652	99	99	HDPPP20	Lung, Breast/Ovarian
25	647714			1	711			HSSE129	Pancreas, Breast/Ovarian
26	647752	ubiquitin conjugating-protein [Oryctolagus cuniculus] >gij184046 HHR6B (Human homologue of yeast RAD 6); putative [Homo sapiens] >gij30954 E2 protein [Homo sapiens] >gij207555 ubiquitin conjugating-protein [Rattus norvegicus] >gnl PID e233515 HR6B gene pr	gij165780	3	590	100	100	HDTDH46	Lung, Colon



27	651774	P38 [Homo sapiens] >pir[S68363]S68363 protein disulfide-isomerase (EC 5.3.4.1) ER60 precursor - human >sp P30101 ER60_HUMAN PROBABLE PROTEIN DISULFIDE ISOMERASE ER-60 PRECURSOR (EC 5.3.4.1) (ERP60) (58 K.D. MICROSOMAL PROTEIN) (P58) (GRP58) (ERP57). Length	gij1147739	1	1632	96	96	HDPAA15	Lung, Pancreas, Breast/Ovarian
28	651995	collagen [Mus musculus] >pir[S23779]S23779 collagen alpha 1(VIII) chain - mouse >sp Q00780 CA18_MOUSE COLLAGEN ALPHA 1(VIII) CHAIN PRECURSOR. >hbsj134935 alpha 1-VIII collagen [rats, mesangial cell, Peptide Partial, 172 aa] [Rattus sp.] {SUB 399-570} Leng	gml1P1D)c245912	3	335	90	95	HBTAD44	Lung, Pancreas
29	652156	phospholipid hydroperoxide glutathione peroxidase [Homo sapiens] >sp O43381 O43381 GSHH_HUMAN (EC 1.11.1.9) (GLUTATHIONE PEROXIDASE). >gij3399677 (AC005390) GSSH_HUMAN, partial CDS [Homo sapiens] {SUB 149-197} Length = 197	gij825667	262	633	94	94	HOEBK80	Lung, Breast/Ovarian
30	653010	von Willebrand factor [Homo sapiens]		79	183			HSRAA58	Lung, Pancreas
31	655904	>pir A34480 V WHU von Willebrand factor precursor - human >gij553810 von Willebrand factor [Homo sapiens] {SUB 990-1947} >gmlP1D)c222518 von Willebrand factor [Homo sapiens] {SUB 1-178} >gij340316 von Willebrand antigen	gij340356	632	1891	96	96	HSBBB94	Lung, Breast/Ovarian
32	657852			70	522			HCHAL14	Colon, Breast/Ovarian
33	666414			1	285			HOSFG18	Lung, Pancreas

34	667847	ribosomal protein S9 [Rattus norvegicus] >pir JN0587 S21497 ribosomal protein S9 - rat Length = 194	gi 57143	1	714	98	98	HCFJL62	Lung, Pancreas, Breast/Ovarian
35	670188	G protein gamma-10 subunit [Homo sapiens] >pir J39158 J39158 GTP-binding regulatory protein gamma-10 chain - human >sp P50151 GPGA_HUMAN GUANINE NUCLEOTIDE-BINDING PROTEIN G11(G(S)G(O) GAMMA-10 SUBUNIT. Length = 68	gi 995919	2	238	100	100	HWADR30	Lung, Pancreas
36	670279	ribosomal protein S24 [Homo sapiens] >gi 517222 ribosomal protein S24 [Homo sapiens] >gi 49652 ribosomal protein S19 (AA 1 - 133) [Mesomericus auratus] >gi 57858 ribosomal protein S24 [Rattus norvegicus] >gi 57722 ribosomal protein S24 (AA 1-133) [Rattus	gi 337506	96	503	87	87	HSAYG46	Lung, Pancreas, Breast/Ovarian
37	670729	acidic ribosomal phosphoprotein (P1) [Homo sapiens] >pir B27125 R6HUP1 acidic ribosomal protein P1 - human Length = 114	gi 190234	74	496	100	100	H2CBM17	Lung, Pancreas, Colon, Breast/Ovarian
38	674123			40	438			IYACJ55	Lung, Pancreas
39	676496	collagen type VI, alpha 3 chain [Homo sapiens] >sp E1292418 E1292418 COLLAGEN TYPE VI, ALPHA 3 CHAIN. Length = 3176	gn P D e1292418	250	1029	98	98	HSLIC82	Lung, Pancreas
40	678162	TAXREB107 [Homo sapiens] >pir J51803 J51803 TAXREB107 - human Length = 288	gn P D e1005017	538	974	100	100	HBJJA02	Lung, Pancreas, Breast/Ovarian

41	678248	dolichol-phosphate-mannose synthase [Homo sapiens] >sp O60762 O60762 DOLICHOL-PHOSPHATE-MANNOSE SYNTHASE. >gnl PID d1026578 dolichol-phosphate-mannose synthase [Homo sapiens] {SUB 1-120}; Length = 260	gnl PID d1026577	3	770	100	100	HMTAK71	Lung, Pancreas
42	683668	alpha 1 (I) chain procollagen [Homo sapiens] >gi 180380 alpha-1 type I collagen [Homo sapiens] {SUB 64-201}; Length = 1040	gi 180392	566	1912	94	94	HWHGV07	Lung, Pancreas, Breast/Ovarian
43	693172	Q1Z 7F5 [Homo sapiens] >gi 189266 may code for Wilms' tumor-related protein [Homo sapiens] >gi 190814 Wilms' tumor-related protein [Homo sapiens] >gi 1203971 QM gene product [Homo sapiens] >bbs 135740 QM [human, nontumorigenic Wilms' microcell hybrid c	gi 184407	23	214	97	100	HNIHW05	Lung, Pancreas, Breast/Ovarian
44	694303			2824	3219			HOGAV47	Lung, Breast/Ovarian
45	695042	Description: KRAB zinc finger protein; this is a splicing variant that contains a stop codon and frame shift between the KRAB box and the zinc finger region; Method: conceptual translation supplied by author [Homo sapiens] >sp Q13359 Q13359 KRAB ZINC FING	gi 1049295	471	680	74	91	HHSBX26	Pancreas, Breast/Ovarian
46	699799	lipocortin (AA 1-346) [Homo sapiens] >pir A03080 LUHU annexin I - human >sp P04083 ANX1_HUMAN ANNEXIN I (LIPCORTIN I) (CALPACTIN II) (CHROMOBINDIN 9) (P35) (PHOSPHOLIPASE A2 INHIBITORY PROTEIN) {SUB 2-346}; Length = 346	gi 34388	3	1121	100	100	HNDAA51	Lung, Breast/Ovarian

47	702216	dihydrodiol dehydrogenase [Homo sapiens] >gi487135 hepatic dihydrodiol dehydrogenase [Homo sapiens] >gi181549 dihydrodiol dehydrogenase [Homo sapiens] >pirA53436/A53436 3-alpha- hydroxysteroid/dihydrodiol dehydrogenase (EC 1.1.1.-) - human >sp Q04828 DB	gi452484	41	1048	95	95	HNALC11	Lung, Pancreas
48	703015	latent transforming growth factor-beta-binding protein - human Length = 1820	pirA55494/A55494	3	587	100	100	HGCCX28	Lung, Pancreas
49	706391	vacuolar H+ ATPase: proton channel subunit [Homo sapiens] >pirA39367/A39367 H+-transporting ATPase (EC 3.6.1.35) chain PKD1 - human Length = 155	gi189676	29	622	85	85	HMA1B1.73	Lung, Breast/Ovarian
50	706892	copper transport protein HAH1 [Homo sapiens] >sp O00244 O00244 COPPER TRANSPORT PROTEIN HAH1. Length = 68	gi1945365	3	287	82	82	HUFD583	Lung, Breast/Ovarian
51	706924			2847	3215			HRA1B20	Lung, Breast/Ovarian
52	707642	ribosomal protein L8 [Homo sapiens] >gi57704 ribosomal protein L8 [Rattus rattus] >gi1527178 ribosomal protein L8 [Mus musculus] >pir J0177 RSRTL8 ribosomal protein L8, cytosolic - rat >pir JN0923 JN0923 ribosomal protein L8, cytosolic - human >gi3851	gi433899	1	516	94	94	HSLD144	Lung, Pancreas, Colon, Breast/Ovarian
53	710369			99	611			HSPA181	Lung, Pancreas, Breast/Ovarian
54	718826			581	877			HSIFK68	Lung, Breast/Ovarian

55	719790	lipocortin II [Homo sapiens] >pir A23942 LCHU36 annexin II - human >sp P07355 ANX2_HUMAN ANNEXIN II (LIPOCORTIN II) (CALPACTIN I HEAVY CHAIN) (CHROMOBINDIN 8) (P36) (PROTEIN I) (PLACENTAL ANTICOAGULANT PROTEIN IV) (PAP-IV), (SUB 2-339) >sp G54587 G54587	gnl PID d1000439	3	869	98	98	HKABK62	Lung, Pancreas
56	720222	homology with 16.7 KD putative viral protein YU1B1_NPVAC [Caenorhabditis elegans] Length = 250	gnl PID e1346018	34	729	45	60	HSKEP04	Lung, Pancreas, Breast/Ovarian
57	724033			1	654			HPJBV92	Lung, Pancreas, Breast/Ovarian
58	724767	epsilon isoform of 61kDa regulatory subunit of PP2A [Homo sapiens] >gil 478070 protein phosphatase B56-epsilon [Homo sapiens] >sp Q16537 Q16537 EPSILON ISOFORM OF 61KDA REGULATORY SUBUNIT OF PP2A. >gil 022892 protein phosphatase PP2A0 B' subunit delta is	gnl PID e220196	71	526	100	100	HKABH59	Lung, Breast/Ovarian
59	727065	ATPase [Homo sapiens] Length = 617	gil 291868	228	1010	99	99	HELGY15	Lung, Pancreas
60	727246	(AB009282) cytochrome b5 [Homo sapiens] >sp O43169 O43169 CYTOCHROME B5 (FRAGMENT). Length = 146	gnl PID d1024640	3	509	96	98	HCFMH52	Lung, Colon
61	727932			41	199			HLJDQ33	Lung, Breast/Ovarian
62	731167	Sec23 protein [Homo sapiens] Length = 765	gnl PID e236013	1	987	99	99	HDTFM51	Lung, Pancreas

63	732514	lysophosphatidic acid acyltransferase-alpha [Homo sapiens] >gil2253613 putative lysophospholipid acyltransferase [Homo sapiens] >gnlPIDe286645 1-acylglycerol-3-phosphate O-acyltransferase [Homo sapiens] >sp Q99943 PLCA_HUMAN 1-ACYL-SN-GLYCEROL-3-PHOSPHA	gil2155238	3	794	99	99	HEIDBX26	Pancreas, Prostate
64	734080			1	567			HEIBK44	Lung, Breast/Ovarian
65	734288	cysteinyl-tRNA synthetase [Homo sapiens] Length = 595	gil927229	154	2067	99	99	HKABU01	Lung, Pancreas
66	739448	Nascent polypeptide associated complex alpha subunit [Homo sapiens] >gil4092060 (AF054187) alpha NAC [Homo sapiens] >pir S49326 S49326 Nascent polypeptide associated complex alpha chain - human >sp Q13765 Q13765 NASCENT POLYPEPTIDE ASSOCIATED COMPLEX ALPHA	gil556642	441	1184	82	82	HKCAT31	Lung, Breast/Ovarian
67	739668			2	484			HAPTL07	Lung, Pancreas
68	740060	D10F33 gene product [Homo sapiens] >sp Q13530 Q13530 PLACENTAL PROTEIN D10F33 Length = 494	gil1293563	76	1536	94	94	HMEGB82	Lung, Pancreas
69	741560			3	296			HCGM112	Lung, Colon
70	742543	human gamma-glutamyl hydrolase [Homo sapiens] >sp Q92820 Q92820 HUMAN GAMMA-GLUTAMYL HYDROLASE (EC 3.4.22.12). Length = 318	gil2951931	187	804	99	100	HE2BG62	Lung, Colon, Breast/Ovarian
71	742831			25	297			HCDAL47	Pancreas, Colon

72	745327	channel-like integral membrane protein [Homo sapiens] >gi1314304 channel-like integral membrane protein [Homo sapiens] >pirA41616 A41616 erythrocyte integral membrane protein 28K - human >sp P29973 AQP1_HUMAN AQUAPORIN-CHIP (WATER CHANNEL PROTEIN FOR RE	gi180501	1	534	98	98	98	IHWHPM73	Lung, Pancreas
73	745695	Mac-2 binding protein [Homo sapiens] >gi483474 90K gene product [Homo sapiens] >pirA47161 A47161 Mac-2-binding glycoprotein precursor - human >sp Q08380 Q08380 MAC-2 BINDING PROTEIN PRECURSOR. Length = 585	gi307153	886	2016	98	98	98	IIOPIBN02	Lung, Pancreas
74	750316	(AF029890) hepatitis B virus X interacting protein [Homo sapiens] >sp O43504 O43504 HEPA TITIS B VIRUS X INTERACTING PROTEIN. Length = 91	gi2745883	99	398	100	100	100	IKMLD65	Lung, Pancreas, Breast/Ovarian
75	750522			172	906				HUKF158	Lung, Pancreas, Colon, Breast/Ovarian
76	750583			58	189				IIBJB66	Lung, Breast/Ovarian
77	751020			1	480				IIEBAE80	Lung, Breast/Ovarian
78	752196			1	120				HL1AL67	Pancreas, Prostate
79	753084	UGT1re1 [Homo sapiens] >pir JC5024 JC5024 UDP-galactose transporter related isozyme 1 - human >sp P78383 P78383 UGTREL1. Length = 322	gi1669560	53	1168	87	87	87	IIDPKG74	Lung, Pancreas
80	754957	The hal1237 gene product is related to S.pombe rad21 gene product. [Homo sapiens] Length = 631	gnl PID d1008135	242	1330	94	94	94	HWBGIB01	Lung, Pancreas

81	756557	myosin I heavy chain [Rattus norvegicus] >pir A45439 A45439 myosin I heavy chain - rat >sp Q05096 Q05096 MYOSIN HEAVY CHAIN I. Length = 1136	gi 56733	1	888	94	94	HIE8AF67	Lung, Pancreas, Colon, Breast/Ovarian
82	756712	5-lipoxygenase activating protein [Homo sapiens] >pir A39824 A39824 5-lipoxygenase-activating protein - human >sp P20292 FLAP_HUMAN 5- LIPPOXYGENASE ACTIVATING PROTEIN (FLAP) (MK-886-BINDING PROTEIN), Length = 161	gi 182658	1457	1729	99	100	HSYBW76 HICABA08	Lung, Pancreas Lung, Colon
84	757614	tetrapeptide repeat protein [Homo sapiens] >sp Q99614 Q99614 TETRAPETRIPEPTIDE REPEAT PROTEIN, Length = 292	gi 1688074	83	991	100	100	HMEIS13	Lung, Pancreas, Breast/Ovarian
85	757815	(AF038604) contains similarity to Drosophila ovarian tumor locus protein (GB:X13693) [Caenorhabditis elegans] >sp O44438 O44438 B0546.2 PROTEIN, Length = 346	gi 2702370	2	988	58	81	HCHOL74	Lung, Breast/Ovarian
86	759878	nuclear pore complex protein NUP107 [Rattus norvegicus] >pir A54142 A54142 nucleoporin NUP107 - rat >sp P52590 N107_RAT NUCLEAR PORE COMPLEX PROTEIN NUP107 (NUCLEOPORIN NUP107) (107 KD NUCLEOPORIN) (P105), Length = 926	gi 510717	526	1833	86	88	HNTAP78	Lung, Breast/Ovarian
87	760227	(AC003040) putative nicotinate phosphoribosyltransferase [Arabidopsis thaliana] >sp O80459 O80459 PUTATIVE NICOTINATE PHOSPHORIBOSYLTRANSFERASE, Length = 574	gi 3242705	2	484	52	71	HCHMM71	Pancreas, Breast/Ovarian



88	760312	chondroitin sulfate proteoglycan versican V0 splice-variant precursor peptide [Homo sapiens] >sp P13611 PGCV_HUMAN VERSICAN CORE PROTEIN PRECURSOR (LARGE FIBROBLAST PROTEOGLYCAN) (CHONDROITIN SULFATE, PROTEOGLYCAN CORE PROTEIN 2) (GLIAL HYALURONATE- BINDIN	gij608515	993	3215	99	99	HMVD07	Lung, Pancreas
89	766051			1	627			HMAFA79	Lung, Breast/Ovarian
90	767593			327	497			HCECT76	Pancreas, Colon
91	768053	(AF039688) antigen NY-CO-3 [Homo sapiens] >sp O60525 O60525 ANTIGEN NY-CO-3 (FRAGMENT). Length = 192	gij3170176	251	625	99	99	ITTFE171	Pancreas, Breast/Ovarian
92	768055	ATP synthase gamma-subunit [Homo sapiens] >gnl P1D1004512 ATP synthase gamma-subunit [Homo sapiens] >pir A49108 A49108 H+-transporting ATP synthase (EC 3.6.1.34) gamma chain - human >sp P36342 ATPG_HUMAN ATP SYNTHASE GAMMA CHAIN, MITOCHONDRIAL PRECURSOR	gnl P1D1004511	32	949	100	100	HAAQ70	Lung, Pancreas
93	769685	src-like tyrosine kinase (put.): putative [Homo sapiens] Length = 537	gij338228	1005	1409	100	100	HIRADN48	Lung, Pancreas, Colon, Breast/Ovarian
94	771920	F36D4.2 gene product [Caenorhabditis elegans] >sp Q20100 Q20100 COSMID F36D4. Length = 224	gij1245686	711	1562	58	77	HAIDT44	Lung, Pancreas
95	772790	cell division inhibitor [Synecocystis sp.] >pir S77404 S77404 cell division inhibitor - Synecocystis sp. (PCC 6803) >sp P73467 P73467 CELL DIVISION INHIBITOR. Length = 339	gnl P1D1018240	145	1158	35	54	HCEOT95	Lung, Breast/Ovarian

96	772916	similar to human ZFY protein. [Homo sapiens] >sp Q92610 Q92610 MYELOBLAST KIAA0211. Length = 1267	gnl PI D d1013891	3	965	99	99	HCEIT26	Lung, Pancreas
97	773225			52	504			HCLB178	Lung, Pancreas
98	773632	Hrs [Homo sapiens] >gi 2731383 HGIF receptor substrate Hrs [Homo sapiens] >sp O14964 O14964 HRS, COMPLETE CDS. Length = 777	gnl PI D d1024245	1	309	98	98	HCLVQ60	Pancreas, Prostate, Breast/Ovarian
99	774364	(AF080561) SYT interacting protein SIP [Homo sapiens] >sp O75932 O75932 SYT INTERACTING PROTEIN SIP. Length = 669	gi 3746787	1	408	100	100	HCHAR77	Pancreas, Breast/Ovarian
100	775355			1599	1781			HDTBY31	Lung, Pancreas
101	775844	rlp transforming protein [Homo sapiens] >pir A28101 TVHURF ret finger protein - human >gnl PI D c308255 RFP [Homo sapiens] {SUB 250- 513; Length = 513	gi 3337372	138	1877	92	92	HISCU10	Lung, Pancreas
102	777760	(AF015040) NUMB protein [Homo sapiens] >sp G4102705 G4102705 NUMB PROTEIN. >gi 4050088 (AF109907) S171 [Homo sapiens] {SUB 79-603; >gi 887362 ORI putative [Homo sapiens] {SUB 469-603; Length = 603	gi 4102705	62	1372	88	88	HMSIHK67	Pancreas, Breast/Ovarian
103	779837	tazarotene-induced gene 2 [Homo sapiens] >sp Q99969 Q99969 TAZAROTENE-INDUCED GENE 2. Length = 163	gi 1848264	88	567	97	98	HISWBV38	Lung, Pancreas
104	780769	(AF084259) bromodomain-containing protein BPT5 [Mus musculus] >sp O88665 O88665 BROMODOMAIN-CONTAINING PROTEIN BPT5. Length = 651	gi 3493162	100	762	35	58	HULBS08	Lung, Pancreas
105	781445			496	1443			HMVAP52	Pancreas, Breast/Ovarian

106	781531	lumican [Homo sapiens] Length = 338	gi1699577	1	486	100	100	HCHAF71	Pancreas, Breast/Ovarian
107	783018	ovary2 [Drosophila melanogaster] >spQ27924Q27924 OVARY2. >gi1208729 ovary2 [Drosophila melanogaster] [SLB 386-515] Length = 545	gi1208732	120	674	58	76	HTPCZ45	Pancreas, Breast/Ovarian
108	783097	myogenic repressor 1-m1 [Homo sapiens] >spQ99750Q99750 MYOGENIC REPRESSOR 1- MF. Length = 246	gi1763615	413	919	85	85	HMWGR19	Lung, Colon
109	784198	(AJ005893) JM26 [Homo sapiens] >spO60828O60828 JM26 PROTEIN, COMPLETE CDS (CLONE LLOXNC01U138D3 (BAYLOR COLLEGE)). Length = 265	gnl p ID e1289747	80	943	81	81	HNTN385	Lung, Pancreas, Breast/Ovarian
110	784868	WW-domain binding protein 1 [Mus musculus] >spP9764P9764 WW-DOMAIN BINDING PROTEIN 1. Length = 305	gi1777577	1	969	77	85	HNTNQ08	Lung, Pancreas, Breast/Ovarian
111	785428	translation initiation factor 5 [Homo sapiens] >spP55010P55_HUMAN EUKARYOTIC TRANSLATION INITIATION FACTOR 5 (EIF- 5). Length = 431	gi1229140	308	1606	87	87	HPMCH14	Lung, Pancreas, Breast/Ovarian
112	785845			67	1350			HCGBE06	Lung, Colon, Breast/Ovarian
113	785854			3	509			HUSX165	Lung, Pancreas
114	786705			64	180			HBJJB89	Lung, Pancreas, Breast/Ovarian
115	787186			319	975			HUKBB89	Lung, Pancreas
116	787279	proteasome subunit z [Homo sapiens] >spQ99436Q99436 PROTEASOME SUBUNIT Z, Length = 277	gnl p ID d1007816	80	856	94	94	HKAJZ91	Lung, Breast/Ovarian
117	789002			178	402			HATBM56	Lung, Pancreas, Breast/Ovarian

118	789008	1.8 kb mRNA (AA 1-84) [Homo sapiens] >pirS03384[S03384 hypothetical protein (IGF-II 3' region) - human >sp P09565 IG2R_HUMAN PUTATIVE INSULIN-LIKE GROWTH FACTOR II ASSOCIATED PROTEIN. Length = 84	gi33000	1354	1737	100	100	HIHCN20	Lung, Pancreas
119	789555	(AL035247) hypothetical trp-asp repeat protein [Schizosaccharomyces pombe] Length = 760	gn PID e1371207	124	1815	42	66	HTTCB23	Pancreas, Breast/Ovarian
120	789631			192	320			HLICN93	Lung, Pancreas, Colon
121	789779			1	396			HCHMS40	Colon, Breast/Ovarian
122	790387			3	527			HLMNA32	Colon, Breast/Ovarian
123	790461	(AF008445) phospholipid scramblase [Homo sapiens] >gn PID d1033532 (AB006746) hMmTIR1b [Homo sapiens] >gi4092081 (AF098642) phospholipid scramblase; plasma membrane phospholipid scramblase [Homo sapiens] >sp O15162 O15162 PHOSPHOLIPID SCRAMBLASE. >sp G4	gi2282601	105	1193	99	99	HTGAV10	Lung, Pancreas, Breast/Ovarian
124	790931			2	394			HBCAO30	Pancreas, Breast/Ovarian
125	791176	(AB002107) hPer [Homo sapiens] >gi2435507 (AF022991) Rigui [Homo sapiens] >sp O15534 O15534 RIGUI. Length = 1290	dh j AB002107_1	3	1034	90	90	INFCJ67	Lung, Pancreas
126	791983			637	837			HIBLE45	Lung, Pancreas, Colon, Breast/Ovarian

127	792539	(AF020833) eukaryotic translation initiation factor 3 subunit [Homo sapiens] >sp O14801 O14801 EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT. Length = 320	gi 2460200	94	1068	94	94	HDPPX89	Lung, Pancreas, Breast/Ovarian
128	792749	protein arginine N-methyltransferase [Rattus norvegicus] >sp Q63009 ANML_RAT PROTEIN ARGININE N-METHYLTRANSFERASE 1 (EC 2.1.1.-). Length = 353	gi 1390025	34	1104	95	96	HDQEP64	Lung, Breast/Ovarian
129	792961	(AF036249) polymerase I-transcript release factor; PTRF [Mus musculus] >sp O54724 O54724 POLYMERASE I AND TRANSCRIPT RELEASE FACTOR (POLYMERASE I-TRANSCRIPT RELEASE FACTOR). Length = 392	gi 2674195	778	1305	85	86	HMEKG25	Lung, Breast/Ovarian
130	793206	dJ1409.2 (Melanoma-Associated Antigen Mage-Like) [Homo sapiens] >sp O76058 O76058 DJ1409.2 (MELANOMA-ASSOCIATED ANTIGEN MAGE LIKE). Length = 606	gn P D e 311294	889	1365	99	99	HTWFN71	Lung, Pancreas
131	793249	proliferation associated gene (pag) gene product [Homo sapiens] >pir A46711 A46711 proliferation associated gene (pag) protein - human Length = 199	gi 287641	3	701	100	100	HJAAE81	Lung, Pancreas, Breast/Ovarian
132	793626	alpha mannosidase II isozyme [Homo sapiens] >sp P49641 MA2X_HUMAN ALP11A-MANNOSIDASE IIX (EC 3.2.1.114) (MANNOSYL-OLIGOSACCHARIDIE 1,3-1,6-ALPHA-MANNOSIDASE) (MAN IIX). Length = 1139	gn P D d 1010153	119	640	99	99	HWABS13	Lung, Pancreas

133	794417	(AF047470) malate dehydrogenase precursor [Homo sapiens] >sp O43682 O43682 MALATE DEHYDROGENASE (EC 1.1.1.37) PRECURSOR (EC 1.1.1.37). Length = 338	gil2906146	3	1142	99	99	HPHBR03	Lung, Pancreas, Breast/Ovarian
134	795197			82	888			HDPFT26	Lung, Breast/Ovarian
135	795251	GAP SH3 binding protein [Homo sapiens] >sp Q13283 Q13283 GAP SH3 BINDING PROTEIN. Length = 466	gil1051170	101	1531	91	91	HIE8FJ92	Pancreas, Breast/Ovarian
136	795752			2	1018			HWBDR92	Lung, Pancreas
137	796261	ubiquitin carrier protein E2 - human >gil181916 ubiquitin carrier protein [Homo sapiens] (SUB 23- 247) Length = 247	pirB42856 B42856	3	851	87	87	HCHPQ06	Colon, Breast/Ovarian
138	796933	lumican [Homo sapiens] Length = 338	gil699577	49	1107	94	94	HPMSD56	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
139	799424			525	1553			HIEONK47	Lung, Pancreas, Breast/Ovarian
140	799698			1	426			HCTHAM08	Colon, Breast/Ovarian
141	800351	DNAJ homolog [Homo sapiens] >gil1127833 heat shock protein hsp40 homolog [Homo sapiens] >pir G02272 G02272 heat shock protein hsp40 homolog - human >sp Q13431 Q13431 HEAT SHOCK PROTEIN HSP40 HOMOLOG. Length = 178	gil1518918	282	860	83	84	HEMFPO5	Pancreas, Breast/Ovarian

142	800573	26S protease subunit [Sus scrofa] >gi3193258 (AF069053) proteasome subunit SUG1 [Bos taurus] >gnlPID d1012606 proteasomal ATPase (rat SUG1) [Rattus norvegicus] >gnlPID d1023806 (AB000491) proteasome p45/SUG [Rattus norvegicus] >gnlPID e199326 mSUG1 pr	gnlPID e235521	178	1383	93	93	HCEVS28	Lung, Breast/Ovarian
143	805815			15	1055			HC1A1P80	Lung, Colon, Breast/Ovarian
144	806445			711	1028			HTELC67	Lung, Pancreas
145	810309	(AF098482) transcriptional coactivator p52 [Homo sapiens] >sp G4050034 G4050034 TRANSCRIPTIONAL COACTIVATOR P52. Length = 333	gi4050034	226	741	61	75	HNTDX22	Lung, Pancreas
146	811022			168	881			HISEA13	Lung, Pancreas
147	811023			13	234			HLWAW17	Lung, Pancreas, Colon, Breast/Ovarian
148	811143	cytokine inducible SH2-containing protein [Mus musculus] >pir S5555 S55551 cytokine-inducible protein C15 - mouse >sp Q62225 Q62225 CYTOKINE INDUCIBLE SH2-CONTAINING PROTEIN (SH2 DOMAIN CONTAINING PROTEIN INDUCED BY MULTIPLE CYTOKINES, SIC). Length = 257	gnlPID d1007285	3	887	90	92	HDQPA25	Lung, Breast/Ovarian
149	811381	FIN14 gene product [Mus musculus] >sp Q61077 F114 MOUSE FIBROBLAST GROWTH FACTOR INDUCIBLE PROTEIN 14 (FIN14). Length = 61	gi1353711	1338	1511	86	91	HLYEK93	Colon, Breast/Ovarian

150	811595	CIRP [Homo sapiens] >gi2924760 (AC004258) CIRP [Homo sapiens] >gi2541973 (AF021336) DNA damage-inducible RNA binding protein [Homo sapiens] >sp Q1401 Q1401.1 GLYCINE- RICH RNA BINDING PROTEIN CIRP. Length = 172	gnl PID U1011874	1	609	100	100	HDPI.A92	Pancreas, Breast/Ovarian
151	813000	Tera [Mus musculus] >sp P70361 P70361.TERA. Length = 277	gi1575505	95	850	84	86	HDPVZ64	Pancreas, Breast/Ovarian
152	813288	fau gene product [Homo sapiens] >gi31305 fau.1 gene product [Homo sapiens] >pir C1278 C1278 ubiquitin-like protein / ribosomal protein S30, cytosolic - human Length = 133	gi31303	1	510	86	86	HCIIMQ63	Lung, Breast/Ovarian
153	813431	DAP-1 [Homo sapiens] >pir 37274 37274 death- associated protein 1 - human >sp P51397 DAP1_HUMAN DEATH- ASSOCIATED PROTEIN 1 (DAP-1). Length = 102	gi434845	3	470	89	89	HWHQS70	Lung, Pancreas
154	813450	PISSLRE gene product [Homo sapiens] >pir S49330 S49330 serine/threonine kinase (EC 2.7.1.1-) pissire - human >pir 38116 38116 gene PISSLRE protein - human >sp Q1513 Q15131 PISSLRE MRNA. Length = 360	gi556651	1	651	100	100	HCEEJ73	Lung, Pancreas
155	813478	retinoblastoma-binding protein mRbAp48 [Mus musculus] >pir 49366 49366 retinoblastoma- binding protein mRbAp48 - mouse Length = 461	gi1016275	1	1398	99	100	HAIJBI20	Lung, Pancreas, Breast/Ovarian
156	813505	ribosomal protein L23a [Homo sapiens] >gi306549 homology to rat ribosomal protein L23 [Homo sapiens] {SUB 10-156} Length = 156	gi404015	2	496	100	100	HDAIR33	Lung, Pancreas



157	815552	(AJ011497) Claudin-9 [Homo sapiens] >sp E1363658 E1363658 CLAUDIN-9. Length = 211	gn P D e 1363658	317	898	95	96	HUFEH129	Lung, Colon
158	815606	Ki-1/57 intracellular antigen [Homo sapiens] >sp O75804 O75804 Ki-1/57 INTRACELLULAR ANTIGEN (FRAGMENT). Length = 299	gi 3403134	218	1303	90	95	HDPRY63	Lung, Pancreas, Breast/Ovarian
159	816048	neutral protease alpha subunit [Homo sapiens] >gi 35328 protease small subunit (aa 1-268) [Homo sapiens] >gi 1905903 (AD001527) calcium-dependent protease, small (regulatory) subunit (calpain) (calcium-activated neutral proteinase) (CANP) [Homo sapiens] >	gi 179909	24	644	95	96	HTLCZ60	Lung, Breast/Ovarian
160	822978	(AF003130) similar to Achlya ambisexualis antheridiol steroid receptor (NID:gi166306) [Caenorhabditis elegans] >sp O01757 O01757 SIMILAR TO ACHLYA AMBISEXUALIS ANTHERIDIOL STEROID RECEPTOR. Length = 1043	gi 2088668	94	156	60	78	HODIEH46	Lung, Pancreas
161	823616			1449	1775			HCEME79	Pancreas, Colon
162	823981			992	2617			HWHQH79	Lung, Breast/Ovarian
163	824364	drebrin E2 [Homo sapiens] >gn P D d 1005005 drebrin E [Homo sapiens] >pi J N0809 JN0809 drebrin E (clone gDhh13) - human >sp Q16643 DREB_HUMAN DREBRIN E. Length = 649	gi 392890	1	606	84	84	HCHPR34	Colon, Breast/Ovarian

164	824423	UDP-GalNAc:polypeptide N-acetylgalactosaminyl transferase [Homo sapiens] >pir JC4223 JC4223 polypeptide N-acetylgalactosaminyltransferase (EC 2.4.1.41) - human >sp Q10472 PACIT_HUMAN POLYPEPTIDE N-ACETYL GALACTOSAMINYLTRANSFERASE (EC 2.4.1.41) (PROTEIN- UDP	gij971459	61	1743	100	100	HIPW1DL83	Lung, Pancreas
165	825279			36	602			IGEDN61	Lung, Pancreas
166	825442			1	900			HTODA45	Colon, Breast/Ovarian
167	825548	ancient ubiquitous 46 kDa protein AUP46 precursor [Mus musculus] >sp P70295 P70295 ANCIEN <sup>T</sup> UBIQUITOUS PROTEIN PRECURSOR (AUP1), Length = 410	gij1517822	473	1504	81	84	HLUDB77	Lung, Breast/Ovarian
168	825725	hNap36 [Homo sapiens] >sp O00567 NO56_HUMAN NUCLEAR PROTEIN NO156, Length = 602	gnl P D e 1188703	25	723	99	99	HMWIV57	Lung, Pancreas
169	826639	H. sapiens mRNA for rat translocon-associated protein delta homolog [Homo sapiens] >gnl P D e 212192 translocon-associated protein delta subunit precursor [Homo sapiens] >gnl P D e 220312 translocon-associated protein delta subunit precursor [Homo sapiens] >	gij1071681	1	561	100	100	HPVX93	Lung, Colon, Breast/Ovarian
170	827079	(AL009171) 62D9.a [Drosophila melanogaster] >sp E1198294 E1198294 62D9.A, Length = 1305	gnl P D e 1198294	53	2176	71	85	HDAAD02	Lung, Breast/Ovarian

171	827153	pancreatitis-associated protein [Homo sapiens] >gil312807 preproprotein [Homo sapiens] >bbsl121222 PAP-H=pancreatitis-associated protein [human, pancreas, Peptide, 175 aa] [Homo sapiens] >gnlPID1003233 PAP homologous protein [Homo sapiens] >pir/A49616/A49	gil482909	54	602	90	90	HLQ13595	Pancreas, Colon, Breast/Ovarian
172	827351			1	639			HSKJE35	Colon, Breast/Ovarian
173	827503	(AC004003) serine/threonine kinase RICK; match to protein AF027706 (PID:gil3123887) and mRNA AF027706 (NID:gil3123886) [Homo sapiens] >gil3290172 (AF064824) CARD-containing ICE associated kinase [Homo sapiens] >gil3342910 (AF078530) receptor interacting prote	gil3264574	255	1886	98	98	HLAAB36	Lung, Breast/Ovarian
174	827563	rophilin [Mus musculus] >spQ61085[Q61085 GTP-RHO BINDING PROTEIN 1 (RHOPHLIN). Length = 643	gil1176422	6	776	81	91	HIBGDH1	Colon, Breast/Ovarian
175	827565	serine protease [Homo sapiens] Length = 492	gil2507613	1	744	55	68	HCHAK72	Lung, Pancreas, Colon, Breast/Ovarian
176	827893	homology with GTP binding protein; putative [Caenorhabditis elegans] >pir/S44605[S44605 C02F5.3 protein - Caenorhabditis elegans Length = 573	gil289610	165	836	62	75	HMSOT38	Lung, Pancreas
177	828072			1147	1305			HTECA53	Lung, Pancreas, Breast/Ovarian
178	828228			1105	1314			HVLA1178	Prostate, Colon

179	828241	cathepsin O [Homo sapiens] >pir/A55090/A55090 cathepsin O (EC 3.4.22.-) precursor - human >sp P43234/CATO_HUMAN CATHEPSIN O PRECURSOR (EC 3.4.22.-). Length = 321	gi 574804	2	1012	93	93	HW33P30	Lung, Pancreas, Prostate
180	828287	histone (H2A.Z) [Bos taurus] >gil410 histone H2A.Z (AA 1-127) [Bos taurus] >gil184060 histone (H2A.Z) [Homo sapiens] >gil31975 histone H2A.Z (AA 1-127) [Homo sapiens] >gil3649600 histone [Homo sapiens] >gil204599 histone (H2A.Z) [Rattus norvegicus] >gil57	gil163150	171	572	100	100	HUSIS02	Lung, Pancreas, Prostate, Breast/Ovarian
181	828364			663	1340			HW1GTT17	Pancreas, Breast/Ovarian
182	828371	complement component C1s [Homo sapiens] >gil179648 complement subcomponent C1s precursor [Homo sapiens] >gil763110 complement protein C1s precursor [Homo sapiens] >pir/A40496/C1HUS complement subcomponent C1s (EC 3.4.21.42) precursor - human >sp P09871 C1	gil179646	4	2283	97	97	HLQCQ12	Lung, Pancreas, Colon, Breast/Ovarian
183	828403	DNA-binding protein [Homo sapiens] >pir/A44478/A44478 probable cell growth or differentiation regulator (alternatively spliced type I transcript) - human >sp Q02833 Q02833 PUTATIVE TRANSCRIPTIONAL REGULATORY PROTEIN HRC1. Length = 373	gil184390	1	648	98	98	HDTHL82	Lung, Pancreas, Colon
184	828501	(AF036302) c[IF-2]alpha kinase [Drosophila melanogaster] >sp O61651 O61651 EIF-2ALPHA KINASE. Length = 1589	gil304651	1	1812	36	58	HBMDG73	Lung, Colon, Breast/Ovarian

185	828520	(AJ010840) ATP-dependent RNA helicase [Homo sapiens] >sp E1321519 E1321519 ATP-DEPENDENT RNA HELICASE (FRAGMENT). Length = 420	gnl P1D1e1321519	445	1821	91	91	HRG13N47	Prostate, Breast/Ovarian
186	828527			723	926			HSKGQ05	Lung, Pancreas, Prostate, Breast/Ovarian
187	828538			332	976			HPWDF55	Lung, Prostate, Breast/Ovarian
188	828541	pre-pump-1 proteinase (AA -17 to 250) [Homo sapiens] >gi35803 PUMP [Homo sapiens] >pir B28816 KCHUM matrilysin (EC 3.4.24.23) precursor - human >sp P09237 COG7_HUMAN MATRILYSIN PRECURSOR (EC 3.4.24.23) (PUMP-1 PROTEASE) (UTERINE METALLOPROTEINASE) (MATRI	gi35799	43	933	100	100	HRAC132	Pancreas, Prostate, Colon
189	828549	thrombospondin 2 [Homo sapiens] >pir A47379 TSHUP2 thrombospondin 2 precursor - human Length = 1172	gi307506	26	1738	94	94	HFIAL22	Pancreas, Colon
190	828562			1	342			HPWBR24	Pancreas, Prostate
191	828576			3	731			HPTVU91	Pancreas, Prostate, Colon
192	828602			1050	1568			HPRAT58	Lung, Prostate
193	828628	tumor-associated antigen [Homo sapiens] >pir A36056 A36056 tumor-associated antigen CO-029 - human >sp P19075 CO02_HUMAN TUMOR-ASSOCIATED ANTIGEN CO-029. Length = 237	gi180926	307	1029	94	94	HPRCM33	Pancreas, Prostate, Colon

194	828667	cytochrome c-1 [Homo sapiens] >sp P08574 CY1_HUMAN CYTOCHROME C1, HEME PROTEIN PRECURSOR. >gi 181238 cytochrome c1 [Homo sapiens] {SUB 99-325} Length = 325	gi 181240	2	1006	85	85	HKAOB02	Pancreas, Breast/Ovarian
195	828684	p55CDC [Homo sapiens] >pir A56021 A56021 probable cell division control protein p55CDC - human >sp Q12834 Q12834 P55CDC. Length = 499	gi 468032	41	1573	92	92	HPJAE35	Pancreas, Prostate
196	828727	(AF044954) NADH:ubiquinone oxidoreductase PDSW subunit [Homo sapiens] >gi 4165091 (AF088991) NADH-ubiquinone oxidoreductase PDSW subunit [Homo sapiens] Length = 172	gi 4164442	3	629	93	93	HMCIB12	Lung, Prostate, Breast/Ovarian
197	828734	homologue of Drosophila Fat protein [Homo sapiens] >sp Q14517 Q14517 CADHERIN- RELATED TUMOR SUPPRESSOR HOMOLOG PRECURSOR (FAT PROTEIN HOMOLOG). >gnl PID d1022418 cadherin [Homo sapiens] {SUB 993-1132; Length = 4590	gi 1107687	1	657	99	99	HSRAB84	Pancreas, Colon, Breast/Ovarian
198	828750	(AF035940) similar to mago nashi [Homo sapiens] >gi 2330011 (AF007862) mm-Mago [Mus musculus] >gi 2909828 (AF035939) similar to mago nashi [Mus musculus] >sp O35169 O35169 MM-MAGO. >sp G2909830 G2909830 MAGOH. >sp P30606 MGN_HUMAN MAGO NASHI PROTEIN HOMOL	gi 2909830	13	546	100	100	HPIAC11	Pancreas, Prostate, Breast/Ovarian

199	828842	(AB007191) AMY-1 [Homo sapiens] >gilPID1d1009980 c-myc binding protein [Homo sapiens] >sp Q99417 Q99417 C-MYC BINDING PROTEIN. Length = 103	gilPID1d1023271	1	363	98	100	HOUCA12	Pancreas, Prostate, Breast/Ovarian
200	828843	p48 [Homo sapiens] >sp P50502 HIP_HUMAN HSC70-INTERACTING PROTEIN (PROGESTERONE RECEPTOR-ASSOCIATED P48 PROTEIN). >gil1857033 SCN6 gene product [Homo sapiens] {SUB 99-369} Length = 369	gil904032	3	761	99	100	HOVBNK85	Lung, Pancreas, Prostate
201	828851	(AF054284) spliceosomal protein SAP 155 [Homo sapiens] >sp G4033735 G4033735 SPLICEOSOMAL PROTEIN SAP 155. >gil3387899 (AF070540) putative nuclear protein [Homo sapiens] {SUB 1011-1304} Length = 1304	gil4033735	1	1029	98	98	HOSGA73	Pancreas, Prostate
202	828856	thymidine kinase (EC 2.7.1.21) [Homo sapiens] >gil339719 thymidine kinase [Homo sapiens] >pir A27318 KIHUT thymidine kinase (EC 2.7.1.21), cytosolic - human >sp P04183 KITH_HUMAN THYMIDINE KINASE, CYTOSOLIC (EC 2.7.1.21). >gil339713 thymidine kinase [Homo sapiens]	gil339709	1	804	99	100	HOHEN75	Prostate, Breast/Ovarian
203	828862	tyrosine kinase receptor [Homo sapiens] >pir B41527 B41527 transforming protein (axl(-)) - human Length = 885	gil292870	1	417	98	98	HOHB190	Prostate, Breast/Ovarian
204	828870	TRAM protein [Homo sapiens] >pir S30034 S30034 translocating chain-associating membrane protein - human >sp Q15629 Q15629 TRAM PROTEIN. Length = 374	gil37265	32	1279	94	94	HOEKU65	Lung, Pancreas, Colon

205	828873	precursor polypeptide (AA -31 to 1139) [Homo sapiens] >gi 538354 thrombospondin [Homo sapiens] {SUB 1-397} >gi 339669 thrombospondin [Homo sapiens] {SUB 1028-1170} >gi 532689 thrombospondin-1p180 [Homo sapiens] {SUB 364-422} Length = 1170	gi 37465	1	1398	100	100	H0HCJ26	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
206	828892	keratin [Homo sapiens] >sp Q14533 Q14533 KERATIN (HAIR TYPE II BASIC KERATIN) (KERATIN LIKE). >gnl PID e118093 hair type II basic keratin [Homo sapiens] {SUB 81-505} >gi 951272 keratin like [Homo sapiens] {SUB 249-505} >hhs I61491 type II hair keratin {cl	gnl PID e321549	3	653	90	91	H0GAA83	Lung, Prostate, Breast/Ovarian
207	828893	ESX [Homo sapiens] >gi 1841523 ESE-1b [Homo sapiens] >gi 2338756 AF017307 Ets-related transcription factor [Homo sapiens] >gi 2384740 AF016295 Ets transcription factor [Homo sapiens] >gi 2459797 epithelial-specific ets protein [Homo sapiens] >sp P78545	gi 1754538	36	1253	86	86	H0GAS09	Pancreas, Prostate, Colon, Breast/Ovarian
208	828897	prostin [Homo sapiens] >gi 862305 prostin [Homo sapiens] >pir A57014 A57014 prostin (EC 3.4.21.-) precursor - human >sp G565130 G565130 PROSTASIN=SERINE PROTEINASE (N-TERMINAL); {SUB 45-64} Length = 343	gi 1143194	59	811	92	92	HBCAY53	Pancreas, Colon, Breast/Ovarian



209	828910	light chain 3 subunit of microtubule-associated proteins 1A and 1B [Rattus norvegicus] >pir A53624 A53624 microtubule-associated protein 1 light chain 3 - rat >sp Q62625 MPL3_RAT MICROTUBULE-ASSOCIATED PROTEINS 1A/1B LIGHT CHAIN 3 (MAP1A/MAP1B LC3). {SUB	gi 455109	28	540	96	98	HCHDY41	Prostate, Colon
210	828927	cytochrome c oxidase subunit Va [Homo sapiens] >pir T0342 OTHU5A cytochrome-c oxidase (EC 1.9.3.1) chain Va precursor - human >sp P20674 COXA_HUMAN CYTOCHROME C OXIDASE POLYPEPTIDE VA PRECURSOR (EC 1.9.3.1). >gi 3859864 (AF067635) cytochrome c oxidase su	gi 695360	1	567	99	99	HHFJM88	Lung, Breast/Ovarian
211	828932	80K-H protein [Homo sapiens] >gi 1293640 protein kinase C substrate 80K-H [Homo sapiens] >pir A32469 A32469 80K protein H precursor - human >sp P14314 G19P_HUMAN PROTEIN KINASE C SUBSTRATE, 80 KD PROTEIN, HEAVY CHAIN (PKCSH) (80K-H PROTEIN). Length = 527	gi 182855	82	1026	83	83	HNAC57	Lung, Pancreas, Prostate, Breast/Ovarian
212	828933	Csa-19 [Homo sapiens] Length = 217	gi 531171	439	852	97	98	HEMCA07	Lung, Pancreas, Breast/Ovarian
213	828941	ORF YJL115w [Saccharomyces cerevisiae] >gi 17091 ASF1 [Saccharomyces cerevisiae] >pir S30766 S30766 ASF1 protein - yeast (Saccharomyces cerevisiae) >sp P32447 ASF1_YEAST ANTI-SILENCING PROTEIN 1. Length = 279	gi 1008304	1	729	59	74	HMGIB125	Lung, Pancreas, Colon, Breast/Ovarian

214	828957	F31C3.5 [Caenorhabditis elegans] >sp O62193 O62193_F31C3.5 PROTEIN. Length = 180	gnl P D e 1346411	3	635	37	68	HMWHG54	Prostate, Breast/Ovarian
215	828963	house-keeping protein [Mus musculus] >pir S27870 S27870 house-keeping protein - mouse >sp Q61669 Q61669 HOUSE-KEEPING PROTEIN 1. Length = 396	gij I93871	73	1293	55	77	HMWHI91	Lung, Prostate, Colon, Breast/Ovarian
216	828964			639	905			HMWFZ60	Pancreas, Prostate, Colon, Breast/Ovarian
217	828966	S-adenosylhomocysteine hydrolase [Homo sapiens] >pir A43629 A43629 adenosylhomocysteinase (EC 3.3.1.1) - human Length = 432	gij I78279	2	1372	98	98	HMWFV54	Lung, Pancreas, Prostate, Breast/Ovarian
218	828967	putative tRNA synthetase-like protein [Homo sapiens] >gij I04935 (AF042347) putative phenylalanyl-tRNA synthetase alpha-subunit; PheHA [Homo sapiens] >sp E317305 E317305 PUTATIVE TRNA SYNTHETASE-LIKE PROTEIN. >sp G2102679 G2102679 PUTATIVE; TRNA SYNTHETASE	gij I2102679	3	1535	98	98	HMUBI12	Pancreas, Prostate, Breast/Ovarian
219	828977	insulin-like growth factor binding protein 2 [Homo sapiens] >bbs I06618 insulin-like growth factor binding protein-2, IGFBP-2 [human, placenta, Peptide, 328 aa] [Homo sapiens] >pir A41927 A41927 insulin-like growth factor- binding protein 2 precursor - hum	gij I79477	2	685	100	100	HMVAW27	Lung, Pancreas, Prostate, Breast/Ovarian

220	828978	annexin IV (placental anticoagulant protein II) [Homo sapiens] >gnl PID d1011889 annexin IV (carbohydrate-binding protein p33/41) [Homo sapiens] >pir A42077 A42077 annexin IV - human >sp P09525 ANX4_HUMAN ANNEXIN IV (LIPOCORTIN IV) (ENDONEXIN I) (CHROMOB)	gil178699	213	1184	100	100	100	HNTMH78	Lung, Pancreas, Prostate
221	828979			16	1080				HIMUBO53	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
222	829001			1621	1959				HIMSIR30	Lung, Pancreas, Prostate, Breast/Ovarian
223	829003	plasma gelsolin [Homo sapiens] >pir A0301 FAHUP gelsolin precursor, plasma - human >sp P06396 GELS_HUMAN GELSOLIN PRECURSOR, PLASMA (ACTIN- DEPOLYMERIZING FACTOR) (ADF) (BREVIN) (AGEL). >gnl PID e20565 plasma gelsolin (AA 49- 117) [Homo sapiens] {SUB 49-11	gil736249	635	2536	99	99	99	HMSKA53	Lung, Pancreas, Prostate
224	829016	(AB006625) The human homolog of a mouse imprinted gene, Peg3. [Homo sapiens] >sp P78418 P78418 KIA0287 (PEG3) (FRAGMENT). >gil1899244 PEG3 [Homo sapiens] {SUB 518-1132} Length = 1132	dbj AB006625_1	409	759	87	87	87	HIMIA173	Prostate, Breast/Ovarian
225	829027	ras-like protein [Homo sapiens] >pir D34788 TVHUC4 transforming protein ras (teratocarcinoma clone TC10) - human Length = 213	gil190881	2	577	100	100	100	HIMIBE59	Prostate, Colon

226	829028	RnudC gene product [Rattus norvegicus] >pir A53897 A53897 prolactin-induced T cell protein c15 - rat >sp Q63525 Q63525 C15 MRNA. Length = 332	gil619907	31	1110	95	98	HMCIBQ56	Pancreas, Prostate, Breast/Ovarian
227	829031	protocadherin X [Mus musculus] >sp G409553 G409553 PROTOCADHERIN X. Length = 928	gil4099553	116	637	90	93	HMCIB169	Lung, Pancreas, Prostate, Breast/Ovarian
228	829034			28	1362			HMEIY69	Pancreas, Prostate
229	829036	Similar to B.subtilis Poly(A) polymerase (SW:PAPS_BACSU) [Caenorhabditis elegans] >sp Q93795 Q93795 F55B12.4 PROTEIN. Length = 440	gn P D e 1347205	114	1151	67	81	HMEIJ75	Pancreas, Prostate
230	829049	UDP-Gal:GlcNAc galactosyltransferase [Homo sapiens] >sp O60910 O60910 UDP-GAL:GLCNAC GALACTOSYLTRANSFERASE. Length = 393	gn P D e 1283714	233	1444	94	94	HMEIJQ33	Prostate, Colon
231	829073			193	843			HL YCD85	Pancreas, Prostate
232	829075			2	484			HMAAD66	Lung, Pancreas, Prostate, Breast/Ovarian
233	829076			3	665			HADDC41	Lung, Pancreas, Breast/Ovarian
234	829080			3	500			HMAABG80	Prostate, Breast/Ovarian
235	829087	small GTP-binding protein [Oryctolagus cuniculus] >pir A48500 A48500 small GTP-binding protein Rab25 - rabbit Length = 213	gil436001	157	873	95	97	HL WB Y67	Pancreas, Prostate, Breast/Ovarian

236	829092	UDP-galactose translocator [Homo sapiens] >pir JC4903 JC4903 UDP-galactose transporter. splice form 1 - human Length = 393	gnl P D d1013353	1	513	85	85	HLWBC74	Pancreas, Prostate
237	829095			3	425			HLWBM89	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
238	829096	antiquitin=26g turgor protein homolog [human, kidney, Peptide, 511 aa] [Homo sapiens] >pir A54676 A54676 antiquitin - human >sp P49419 DHAX_HUMAN ANTIQUITTIN (EC 1.2.1.-). Length = 511	bbs I58840	552	1628	97	97	HLWAO28	Prostate, Breast/Ovarian
239	829118	nuclear autoantigen fo 14 kDa [Homo sapiens] >sp O43805 O43805 NUCLEAR AUTOANTIGEN FO 14 KDA. Length = 119	gnl P D e322419	2	415	99	99	HLSIDA35	Lung, Prostate
240	829152	unknown protein precursor [Homo sapiens] >pir JN0596 JN0596 fibrinogen-related protein II(FR)P-1 precursor - human >sp Q08830 Q08830 FIBRINOGEN-LIKE PROTEIN 1 PRECURSOR. Length = 312	gnl P D d1003846	215	1231	95	95	HLICUR2	Lung, Pancreas, Prostate
241	829160	ubiquitin-conjugating enzyme UbcH6 [Homo sapiens] Length = 193	gil1064914	2	769	83	83	HLJBF56	Lung, Pancreas, Prostate, Colon
242	829163			403	930			HSPBG80	Lung, Pancreas, Breast/Ovarian
243	829176	C4b-binding protein alpha chain [Homo sapiens] >gil190502 C4b-binding protein alpha chain [Homo sapiens] >pir A33568 NBHUC4 C4b-binding protein alpha chain precursor - human >sp P04003 C4BP_HUMAN C4B-BINDING PROTEIN ALPHA CHAIN PRECURSOR (PROLINE-RICH PRO	gil190500	3	662	100	100	HLQDR92	Lung, Pancreas
244	829204			515	913			HLISB22	Prostate, Breast/Ovarian

245	829207		111	977		HLISA66	Prostate, Breast/Ovarian
246	829228		1	2508		HKGRQ77	Lung, Prostate, Colon
247	829252		96	1322		HKAP121	Pancreas, Prostate
248	829254		1	483		HKFB196	Lung, Pancreas, Prostate,
249	829269		121	474		HKAE196	Breast/Ovarian Lung, Pancreas, Prostate, Colon,
250	829277		3	596		IUPCG91	Breast/Ovarian Lung, Prostate
251	829290		100	207		HUBDI32	Lung, Pancreas, Prostate,
252	829294		3	1847		HISDU47	Breast/Ovarian Pancreas, Prostate
253	829299		3	794		HISEC32	Lung, Pancreas, Prostate
254	829308	d11409.2 (Melanoma-Associated Antigen MAGIE LIKE) [Homo sapiens] >sp O76058 O76058 D11409.2 (MELANOMA-ASSOCIATED ANTIGEN MAGIE LIKE). Length = 606	207	938	47	IIIBCNO3	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
255	829349	ribosomal protein S15a [Rattus norvegicus] >pir JC2234 JC2234 ribosomal protein S15a - rat Length = 130	152	547	100	HICAF44	Lung, Pancreas, Prostate, Breast/Ovarian
256	829354	RAD4 gene product [Saccharomyces cerevisiae] Length = 730	1	1113	44	HAJBD51	Lung, Pancreas, Breast/Ovarian

257	829388	DNase protein [Homo sapiens] >gi1620214 XIB [Homo sapiens] >pirJC4633/JC4633 DNase I-like endonuclease (EC 3.1.-.-) - human >sp P49184 DRNL_HUMAN MUSCLE-SPECIFIC DNASE I-LIKE PRECURSOR (EC 3.1.21.-) (DNASE X) (XIB). Length = 302	gi1929628	319	1281	94	94	HUVC122	Lung, Pancreas, Colon, Breast/Ovarian
258	829340			258	437			HAIPOU28	Lung, Pancreas, Colon, Breast/Ovarian
259	829626	mannosyl-oligosaccharide 1,2-alpha-mannosidase (EC 3.2.1.113) - rabbit (fragment) >gi174282 mannosyl-oligosaccharide alpha-1,2-mannosidase [Oryctolagus cuniculus] (SUB 12-480) Length = 480	pirB54408 B54408	3	764	75	88	HCEES14	Lung, Pancreas, Colon, Breast/Ovarian
260	829730	underexpressed in thyroid tissue after TSH stimulation [Canis familiaris] >sp Q28283 Q28283 CSFV PROTEIN. Length = 343	gn P1D1e252512	455	1153	62	75	HAIJBK53	Pancreas, Breast/Ovarian
261	829892	(AF033631) cellular apoptosis susceptibility protein [Homo sapiens] >sp O75432 O75432 CELLULAR APOPTOSIS SUSCEPTIBILITY PROTEIN. Length = 971	gi13598795	64	1053	85	85	HAMF143	Lung, Prostate
262	829933	(AF035606) calcium binding protein [Homo sapiens] >sp O75340 O75340 CALCIUM BINDING PROTEIN. Length = 191	gi13342794	1	540	86	86	HAICT176	Pancreas, Prostate
263	829938	(AF067855) geminin [Homo sapiens] >sp O75496 O75496 GEMININ. Length = 209	gi13249005	230	952	93	93	HAIBS55	Pancreas, Prostate
264	829969			551	814			HACCB64	Lung, Pancreas, Prostate, Breast/Ovarian

265	829982	(A1020352) NADH:ubiquinone oxidoreductase 15 kDa IP subunit [Homo sapiens] >gij2911482 (AF047434) NADH:ubiquinone oxidoreductase 15kDa subunit; C1-15 protein [Homo sapiens] >sp O43920 NIPM_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE 15 KID SUBUNIT (EC 1.6.5.3) (E	gij2655055	28	399	100	100	11AHC125	Prostate, Breast/Ovarian
266	830007	catechol-O-methyltransferase [Homo sapiens] >gij403304 catechol O-methyltransferase [Homo sapiens] >pir S37406 A38459 catechol O-methyltransferase (EC 2.1.1.6) - human >sp P21964 COMT_HUMAN CATECHOL O-METHYLTRANSFERASE, MEMBRANE-BOUND FORM (EC 2.1.1.6) (M	gij180920	110	1006	99	99	H6EDW66	Lung, Prostate, Breast/Ovarian
267	830019	(A1030249) putative dienoyl-CoA isomerase [Homo sapiens] >gij564065 peroxisomal enoyl-CoA hydratase-like protein [Homo sapiens] >pir J3882 J3882 peroxisomal enoyl-CoA hydratase-like protein - human >sp Q1301 ECH1_HUMAN PROBABLE PEROXISOMAL ENOYL-COA HY	gij2623168	77	976	94	96	I12MAC92	Prostate, Breast/Ovarian
268	830073			1	690			H3WBK27	Lung, Pancreas, Breast/Ovarian
269	830130			1	177			H2LAD55	Lung, Prostate, Breast/Ovarian
270	830134			16	1290			H2CBP53	Lung, Pancreas, Prostate, Colon, Breast/Ovarian



271	830135	neutrophil gelatinase associated lipocalin [Homo sapiens] >sp P80188 NGAL_HUMAN NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN PRECURSOR (NGAL) (P25) (25 KD ALPHA-2-MICROGLOBULIN-RELATED SUBUNIT OF MMP-9) (LIPOCALIN-2) (ONCOGENE 24P3). Length = 198	gi 929657	2	763	100	100	H2MAC06	Pancreas, Prostate, Breast/Ovarian
272	830148	snRNP polypeptide B [Homo sapiens] >sp Q15182 Q15182 SNRNP POLYPEPTIDE B. Length = 285	gi 190247	96	839	79	79	HAICK77	Lung, Prostate, Breast/Ovarian
273	830149	threonyl-tRNA synthetase [Homo sapiens] >pir A38867 YSHUT threonine--tRNA ligase (EC 6.1.1.3) - human Length = 712	gi 1464742	3	2333	95	95	H2CBC04	Lung, Pancreas, Prostate
274	830154	spectrin SH3 domain binding protein 1 [Homo sapiens] >sp O76049 O76049 SPECTRIN SH3 DOMAIN BINDING PROTEIN 1. Length = 508	gi 3165429	2	1081	100	100	HYAAC49	Lung, Pancreas
275	830183	heat shock protein 84 - mouse >pir B34461 B34461 heat shock protein 90 beta - rabbit (fragment) (SUB 1-25) >sp P30947 HS9B_RABBIT HEAT SHOCK PROTEIN HSP 90-BETA (HSP 84) (FRAGMENT). (SUB 2-25) >pir S13268 S13268 heat shock protein, 90K - bovine (fragment)	pir A35569 HMS84	92	358			HWLQF08	Pancreas, Breast/Ovarian
276	830194			3	1043	100	100	HLDCP20	Lung, Pancreas, Breast/Ovarian
277	830207	(AF016437) contains similarity to a C2H2-type zinc finger [Caenorhabditis elegans] >sp O16350 O16350 F13H6.1 PROTEIN. Length = 631	gi 2315332	173	1051	45	63	HWLMF07	Pancreas, Colon
278	830242			85	654			HWLUF58	Lung, Pancreas

279	830328	putative cyclin G1 interacting protein [Homo sapiens] >sp O43257 O43257 PUTATIVE CYCLIN G1 INTERACTING PROTEIN. Length = 154	gil2668505	304	954	81	81	HWLEL26	Lung, Colon, Breast/Ovarian
280	830340	putative cell surface antigen [Rattus norvegicus] >sp P9788 P9788 PUTATIVE CELL SURFACE ANTIGEN. Length = 547	gil1890275	1	336	63	81	HWLEG68	Pancreas, Colon
281	830341	peroxisomal acyl-coenzyme A oxidase, AOX [human, liver, Peptide, 661 aa] [Homo sapiens] Length = 661	bbsl144907	1	648	100	100	HSIA1179	Lung, Pancreas
282	830351			3	656			HWHQT21	Colon, Breast/Ovarian
283	830358			456	716			HSUAE53	Lung, Colon, Breast/Ovarian
284	830390	platelet membrane glycoprotein IIIa beta subunit [Homo sapiens] >sp O15495 O15495 PLATELET MEMBRANE GLYCOPROTEIN IIIA BETA SUBUNIT. Length = 784	gil2443452	2	523	90	90	HWGQA69	Pancreas, Colon
285	830400	phosphate carrier protein [Homo sapiens] >pir B5373 B5373 phosphate carrier protein, form B - human Length = 361	gil38262	2	1078	99	100	HWIIPY68	Lung, Pancreas, Breast/Ovarian
286	830437	IgG Fc receptor I [Homo sapiens] >gil292169 Fc gamma receptor I [Homo sapiens] >pir A39878 A39878 Fc gamma (IgG) receptor I-A (high affinity) precursor - human >sp Q92663 Q92663 FC GAMMA RECEPTOR I. Length = 374	gil180279	3	1199	91	91	HWABG32	Lung, Colon

287	830458	HBp15/L22 [Sus scrofa] >gnl PID d1005074 HBp15/L22 [Mus musculus] >pir JC212 JC2121 heparin-binding protein 15 - pig >pir JC2119 JC2119 heparin-binding protein 15 - mouse Length = 128	gnl PID d1005075	1	441	70	70	HDQMF96	Lung, Pancreas
288	830466	tenascin X [Homo sapiens] >sp P78530 P78530		988	1260			HOELZ61	Lung, Colon
289	830497	TENASCIN X (TENASCIN-X). >gi 2347137 (AF019413) tenascin X [Homo sapiens] {SUB 2593-4289} >pir A42175 A42175 tenascin homolog 3.9kF3-3 - human (fragment) {SUB 2793-2880} >pir B42175 B42175 tenascin homolog 3.9kF	gi 1841546	2	1531	99	99	HUFBX52	Lung, Breast/Ovarian
290	830511	carcinoembryonic antigen [Homo sapiens] >gi 178677 carcinoembryonic antigen precursor [Homo sapiens] >pir A36319 A36319 carcinoembryonic antigen precursor - human >sp P0673 ICCEM_HUMAN CARCINOEMBRYONIC ANTIGEN PRECURSOR (CEA) (MECONIUM ANTIGEN 100) (CD66E	gi 180223	3	1292	99	99	HWLGV67	Pancreas, Colon
291	830512	carcinoembryonic antigen [Homo sapiens] >gi 178677 carcinoembryonic antigen precursor [Homo sapiens] >pir A36319 A36319 carcinoembryonic antigen precursor - human >sp P0673 ICCEM_HUMAN CARCINOEMBRYONIC ANTIGEN PRECURSOR (CEA) (MECONIUM ANTIGEN 100) (CD66E	gi 180223	3	2213	87	89	HUFC129	Lung, Pancreas

292	830513	protein kinase MUK2 [Rattus norvegicus] >gi2772514 serine/threonine protein kinase [Rattus norvegicus] >sp P35465 PAK1_RAT SERINE/THREONINE-PROTEIN KINASE PAK- ALPHA (EC 2.7.1.-) (P68-PAK) (P21- ACTIVATED KINASE) (ALPHA-PAK) (PROTEIN KINASE MUK2). Length	3	215		11PRTG72	Lung, Colon, Breast/Ovarian
293	830540		2	733	100	HTLHR67	Lung, Pancreas, Colon
					gil1399508		
294	830550	guanine nucleotide-binding regulatory protein-beta- 2 subunit [Homo sapiens] >gi139935 transducin beta-2 subunit [Homo sapiens] >gi13135310 (AF033356) GNB2 [Homo sapiens] >pir B26617 RGHUB2 GTP-binding regulatory protein beta-2 chain - human >sp P11016 GB	3	500	100	HTWJC08	Lung, Breast/Ovarian
					gil386751		
295	830567		141	377		HTTBH33	Lung, Pancreas
296	830586	(2'-5')oligoadenylate synthetase [Homo sapiens] Length = 364	2	1192	98	HKACP86	Pancreas, Prostate, Breast/Ovarian
					gnl P1D d1000487		
297	830632	P2 gene for c subunit of mitochondrial ATP synthase gene product [Homo sapiens] >gnl P1D d1002921 ATP synthase subunit c precursor [Homo sapiens] >pir S34067 S34067 II+- transporting ATP synthase (EC 3.6.1.34) lipid- binding protein P2 precursor, mitochondri	264	803	85	HTPCV95	Lung, Breast/Ovarian
					gil38432		

298	830645	propionyl CoA carboxylase beta subunit, beta PCC (EC 6.4.1.3) [human, liver, placenta, HL 1008, Peptide, 539 aa] [Homo sapiens] >pir A53020 A53020 propionyl-CoA carboxylase (EC 6.4.1.3) beta chain precursor - human >gi 3036995 propionyl-CoA carboxylase B	bbs 140816	54	1305	99	99	99	HTEDS58	Lung, Pancreas, Colon
299	830652	strong homology to human RING3 sequence [Homo sapiens] >sp O60885 O60885 HUNK1 mRNA. Length = 722	gn P D e1290115	1	177	64	64	64	HUKFL74	Lung, Colon
300	830659	CDC42 GTP-binding protein [Canis familiaris] >gi 183490 GTP-binding protein G25K [Homo sapiens] >gi 293321 CDC42Mm [Mus musculus] >gi 1049309 CDC42 protein [Mus musculus] >pir A39265 A39265 GTP-binding protein G25K, placental - human >pir S57563 S57563 CD	gi 887408	118	714	100	100	100	HKAOE74	Lung, Pancreas, Breast/Ovarian
301	830696			2	514				ISTTB95	Lung, Breast/Ovarian
302	830706			2457	2909				HELFC05	Pancreas, Breast/Ovarian
303	830743	ATP SYNTHASE EPSILON CHAIN, MITOCHONDRIAL (EC 3.6.1.34). Length = 50	sp P56381 ATPE_HUMAN	53	262	100	100	100	HCBBA51	Lung, Colon
304	830770	p21-activated protein kinase [Homo sapiens] >pir S5862 S5862 protein kinase, p21-activated (EC 2.7.1.-) - human Length = 525	gi 780808	1	498	99	99	99	HEMCG27	Lung, Colon, Breast/Ovarian
305	830830	(AF002822) cyclin B2 [Homo sapiens] >sp G4101270 G4101270 CYCLIN B2. Length = 398	gi 4101270	99	1358	99	99	99	FIROCE57	Lung, Pancreas, Colon

306	830838		1	747		HS2AF59	Lung, Pancreas, Colon, Breast/Ovarian
307	830851		2	718		HTX1J25	Pancreas, Colon
308	830853		2	1183		HRDDSD42	Pancreas, Colon
309	830856		542	874		HSAAX81	Colon, Breast/Ovarian
310	830862	ribosomal protein [Homo sapiens] >gi 453281 ribosomal protein S23 [Rattus norvegicus] >pir S41955 S41955 ribosomal protein S23, cytosolic - rat >pir S42105 S42105 ribosomal protein S23, cytosolic - human >pir 52292 52292 ribosomal protein S23 - rat >gnt	3	518	100	HLIC05	Lung, Prostate, Breast/Ovarian
311	830879	(AJ002120) Zfx [Monodelphis domestica] >sp O19019 O19019 ZFX TYPE GENE (FRAGMENT). Length = 180	2	592	39	HVAA882	Pancreas, Colon
312	830919		69	536		HOUHK65	Pancreas, Breast/Ovarian
313	830969	(AF005046) serine/threonine kinase [Homo sapiens] >gnt PID c1371371 (AJ011855) PAK4 protein [Homo sapiens] >sp G4101587 G4101587 SERINE/THREONINE KINASE. Length = 591	140	514	96	HOGAU20	Pancreas, Breast/Ovarian
314	830991	insulin-like growth factor-binding protein [Homo sapiens] >gi 386791 growth factor-binding protein- 3 [Homo sapiens] >gi 398164 insulin-like growth factor binding protein 3 [Homo sapiens] >pir A36578 OHU3 insulin-like growth factor- binding protein 3 precu	2	607	86	HDLAE73	Pancreas, Breast/Ovarian

315	831002	cyclin [Homo sapiens] >gi 387005 proliferating cell nuclear antigen (PCNA) [Homo sapiens] >pir A27445 WMHJET proliferating cell nuclear antigen - human >sp P12004 PCNA_HUMAN PROLIFERATING CELL NUCLEAR ANTIGEN (PCNA) (CYCLIN). Length = 261	gi 181272	168	974	100	100	100	HOEMJ36	Colon, Breast/Ovarian
316	831003	T-plastin - human >sp P13797 PLST_HUMAN T-PLASTIN. (SUB 4-630) >gi 190028 T-plastin. polypeptide [Homo sapiens] (SUB 61-630) >gi 339848 T-plastin [Homo sapiens] (SUB 1-143) >gi 292832 T-plastin [Homo sapiens] (SUB 588-630) Length = 630	pir A34789 A34789	91	2007	94	95		HAIBD64	Lung, Pancreas
317	831021			474	662				HE8BN45	Pancreas, Colon, Breast/Ovarian
318	831036	(A)006068) dTDP-D-glucose 4,6-dehydratase [Homo sapiens] >sp E1363774 E1363774 DTDP-D- GLUCOSE 4,6-DEHYDRATASE (EC 4.2.1.46). Length = 350	gn P1D1e 1363774	1	621	100	100		HNTSQ61	Pancreas, Colon
319	831071	lrp gene product [Homo sapiens] >pir S57723 S57723 lrp protein - human >sp Q14764 MVP_HUMAN MAJOR VAULT PROTEIN (MVP) (LUNG RESISTANCE- RELATED PROTEIN). Length = 896	gi 895840	67	2610	94	94		HWLEG93	Lung, Pancreas
320	831094			755	928				IINFEO67	Colon, Breast/Ovarian

321	831099	fibronectin receptor beta subunit precursor (AA -20 to 778) [Homo sapiens] >pirB27079 B27079 fibronectin receptor beta chain precursor - human >spIP05556 TB1_HUMAN FIBRONECTIN RECEPTOR BETA SUBUNIT PRECURSOR (INTEGRIN BETA-1) (CD29) (INTEGRIN VLA-4 BETA	gi 31442	3	1697	99	100	11A5AB03	Lung, Pancreas, Colon, Breast/Ovarian
322	831113	4E-binding protein 1 [Homo sapiens] >pirS0866 S0866 4E-BP1 protein - human >pirJC3899 JC3899 initiation factor 4E-binding protein 1 - human >sp Q1354 Q13541 4E- BINDING PROTEIN 1. Length = 118	gi 561630	1	414	100	100	HMWHP74	Lung, Pancreas, Colon, Breast/Ovarian
323	831120	Similarity to Human hnRNP F protein (PIR Acc. No. S43484);		1	1221			HWLHY12	Pancreas, Colon
324	831172	(A1042501) cytochrome b [Homo sapiens] >sp O78829 O78829 CYTOCHROME B (FRAGMENT). Length = 380	gn PI Dc1349655	2	721	52	66	III.WBE22	Pancreas, Breast/Ovarian
325	831178		gi 3372365	512	829	69	70	HDLAC61	Lung, Colon
326	831184			770	1399			HWLGP91	Lung, Pancreas, Colon
327	831203			3	545			HMFQ42	Pancreas, Colon, Breast/Ovarian
328	831210	TGF-beta masking protein large subunit [Rattus norvegicus] >pirA38261 A38261 masking protein precursor - rat Length = 1712	gi 207286	1	498	86	91	HMEI162	Pancreas, Colon
329	831228			104	214			HMEAM30	Lung, Pancreas, Breast/Ovarian



330	831256	MLN 64 [Homo sapiens] >dbj D38255.1 CAB1 [Homo sapiens] >pir I38027 I38027 MLN 64 protein - human >sp Q14849 Q14849 MLN64 mRNA. Length = 445	gij951279	658	1164	94	94	HMTBL29	Lung, Pancreas
331	831257	MLN 64 [Homo sapiens] >dbj D38255.1 CAB1 [Homo sapiens] >pir I38027 I38027 MLN 64 protein - human >sp Q14849 Q14849 MLN64 mRNA. Length = 445	gij951279	323	862	91	91	HLWDQ05	Pancreas, Colon
332	831277			3	1310			HUTHD56	Lung, Pancreas, Colon
333	831317	inter-alpha-trypsin inhibitor light chain [Homo sapiens] >gi 32047 HC polypeptide [Homo sapiens] >gi 24479 precursor polypeptide [Homo sapiens] >gi 825614 alpha1-microglobulin [Homo sapiens] >pir S1343 HCHU alpha-1-microglobulin/inter-alpha-trypsin inhib	gij186600	193	1290	100	100	HLQAC21	Pancreas, Breast/Ovarian
334	831339	(AB012276) ATFX [Mus musculus] >sp O7019 O70191 ATFX (FRAGMENT) >sp G246896 G246896 ATFX=ATF4 RELATED PROTEIN. (SUB 1-37); >sp G246899 G246899 ATFX=ATF-4-RELATED PROTEIN. (SUB 38-76); Length = 84	gnlPID d1026241	631	1029	90	93	HLICC93	Lung, Colon, Breast/Ovarian
335	831363	acyl coenzyme A:cholesterol acyltransferase, carboxylesterase, ACAT {EC 2.3.1.26} [human, liver, Peptide, 568 aa] [Homo sapiens] >sp G415564 G415564 CARBOXYLESTERASE {EC 3.1.1.1}. (SUB 20-568) >gi 179930 carboxylesterase [Homo sapiens] {SUB 62-568} Length	bbs 156481	123	1871	98	98	HLDNR55	Lung, Colon

336	831367	D-dopachrome tautomerase [Homo sapiens] >gi1864028 D-dopachrome tautomerase [Homo sapiens] >gi3047378 (AF058293) D-dopachrome tautomerase [Homo sapiens] >gi11354 phenylpyruvate tautomerase II [Homo sapiens] >gi2352915 (AF012434) D-dopachrome ta	gi1805303	325	618	100	100	III.DOR74	Lung, Colon
337	831379	cDNA from hypercalcemic tumour [Rattus norvegicus] >pirS28223[S28223 parathyroid hormone-like protein - rat >spQ05310[L10K_RAT] LEYDIG CELL TUMOR 10 KD PROTEIN. Length = 93	gi157064	3	383	90	95	HKQAC03	Lung, Pancreas, Colon, Breast/Ovarian
338	831385			96	377			HKIMC75	Lung, Pancreas, Colon, Breast/Ovarian
339	831390	aldehyde reductase (EC 1.1.1.2) [Homo sapiens] >gi2707824 (AF036683) aldehyde reductase [Homo sapiens] >pir/A33851[A33851 alcohol dehydrogenase (NADP+)(EC 1.1.1.2) - human >spG2707824[G2707824 ALDEHYDE REDUCTASE: >spI14550[ALDX_HUMAN ALCOHOL DEHYDROGE	gi178481	254	1312	94	94	HKC1D104	Lung, Pancreas

340	831391	islet regenerating protein [Homo sapiens] >pir A35197 RGHUA regenerating islet lectin I- alpha precursor - human >sp P05451 LTA_HUMAN LITHOSTATHINE, I ALPHA PRECURSOR (PANCREATIC STONE PROTEIN) (PSI) (PANCREATIC TIREAD PROTEIN) (PTP) (ISLET OF LANGERHANS	gij190979	71	592	100	100	HLDIB506	Pancreas, Colon
341	831405	factor H homologue [Homo sapiens] >pir I56100 I56100 factor H homologue - human >sp Q03591 CFH1_HUMAN COMPLEMENT FACTOR H-LIKE PROTEIN 1 PRECURSOR (H36). Length = 330	gij183763	53	1078	94	94	HLD0B31	Lung, Pancreas, Colon, Breast/Ovarian
342	831442	PDGF associated protein [Homo sapiens] >sp Q13442 HP28_HUMAN 28 KD HEAT- AND ACID-STABLE PHOSPHOPROTEIN (HASPP28) (PDGF ASSOCIATED PROTEIN). Length = 181	gij1136584	2	595	60	60	HKAE15	Lung, Pancreas, Colon, Breast/Ovarian
343	831476	dermatopontin [Homo sapiens] >pir A47220 A47220 dermatopontin precursor - human >sp Q07507 DERM_HUMAN DERMATOPONTIN PRECURSOR. >pir S34838 S34838 tyrosine-rich acidic matrix protein - pig (SUB 101-144) Length = 201	gij311614	1	630	91	91	HJMBK21	Lung, Pancreas, Colon
344	831488	similar to Saccharomyces cerevisiae Spl4; protein has potential N-terminal zinc-finger [Homo sapiens] >gij1401053 SUTP4H [Homo sapiens] >gij1401055 SUTP4H [Homo sapiens] >gij1401066 Supt4h [Mus musculus] >gij3779194 chromatin structural protein homolog [M	gij1209779	158	580	100	100	HJBCG39	Colon, Breast/Ovarian

345	831518		240	467		HATCV09	Pancreas, Colon, Breast/Ovarian
346	831519	(AF062536) cullin 1 [Homo sapiens] >sp O60719 O60719_CUL1.LIN 1. >gi4153866 (AC005229) cullin 1 [Homo sapiens] {SUB 1-263} Length = 776	165	1712	100	II01C149	Pancreas, Breast/Ovarian
347	831521		3	863		HIIBC91	Colon, Breast/Ovarian
348	831550	mel-13a protein - mouse Length = 132	158	457	70	HCHNH46	Lung, Pancreas, Breast/Ovarian
349	831560		1474	1818		HCROA68	Pancreas, Breast/Ovarian
350	831562	fibromodulin [Homo sapiens] >sp Q06828 FMOD_HUMAN FIBROMODULIN PRECURSOR (FM) (COLLAGEN-BINDING 59 KD PROTEIN). Length = 376	28	1272	90	HEGAD80	Pancreas, Breast/Ovarian
351	831570	(AF042822) epithin [Mus musculus] >sp G4104970 G4104970 EPITHIN. Length = 902	2	1861	77	HLWCC68	Lung, Pancreas, Colon
352	831593		726	878		HHBFV28	Lung, Pancreas
353	831596	32 kd accessory protein [Bos taurus] >gi1190376 proton ATPase accessory subunit [Homo sapiens] {SUB 264-351}; Length = 351	2	808	100	HHEDJ61	Colon, Breast/Ovarian
354	831627		1	903		HBJHH46	Lung, Pancreas
355	831649		1	738		HFDDX09	Lung, Colon
356	831664	transformation upregulated nuclear protein - human Length = 464	180	1574	94	HPYCU40	Lung, Colon

357	831674	complement protein C8 beta subunit precursor [Homo sapiens] >pir A4307 C8HUB complement C8 beta chain precursor - human >sp P07358 CO8B_HUMAN COMPLEMENT COMPONENT C8 BETA CHAIN PRECURSOR. Length = 591	gi 179720	1	1338	96	96	HLDOX36	Pancreas, Colon
358	831684	(AF053630) monocyte/neutrophil elastase inhibitor [Homo sapiens] >pir S27383 S27383 elastase inhibitor - human >sp P30740 LEU_HUMAN LEUKOCYTE ELASTASE INHIBITOR (LEI) (MONOCYTE/NEUTROPHIL ELASTASE INHIBITOR) (EI). >sp G2997692 G2997692 MONOCYTE/NEUTROPHIL	gi 2997692	1	1311	96	96	HFOXIE22	Pancreas, Colon
359	831687	Mpv17 [Mus musculus] >pir S29031 S29031 mpv17 protein - mouse >sp P19258 MPV1_MOUSE MPV17 PROTEIN. >gi 3252875 (AF038632) Mpv17 protein [Mus musculus] (SUB 155-176) Length = 176	gi 199790	60	305	89	93	11FK11D75	Pancreas, Colon
360	831726	rat ribosomal protein L36 [Rattus norvegicus] >pir N0483 N0483 ribosomal protein L36 - rat Length = 105	gi 312345	77	454	98	98	HAGDQ96	Lung, Breast/Ovarian
361	831736			95	484			HLWEQ18	Colon, Breast/Ovarian
362	831762			37	720			HEQB179	Pancreas, Colon
363	831801	ear-2 gene product [Homo sapiens] >pir S02709 S02709 ear-2 protein - human >sp P10588 EAR2_HUMAN V-ERBA RELATED PROTEIN EAR-2. Length = 403	gi 31065	3	812	76	77	HKAHB85	Lung, Pancreas, Breast/Ovarian

364	831848		2018	2284		HE8AF82	Lung, Colon, Breast/Ovarian
365	831861	(AF076786) serum amyloid A-activating factor SAF-8 [Oryzotagus cuniculus] >sp G3986442 G3986442 SERUM AMYLOID A- ACTIVATING FACTOR SAF-8 (FRAGMENT), Length = 214	341	775	77	HJPCX31	Lung, Pancreas, Breast/Ovarian
366	831866	(AF054174) histone macroH2A1.2 [Homo sapiens] >sp G3341992 G3341992 HISTONE MACROH2A1.2, Length = 371	53	1186	100	HE6FG90	Lung, Colon
367	831878		2	661		HDTLN67	Colon, Breast/Ovarian
368	831899		1	693		HDTBQ51	Colon, Breast/Ovarian
369	831913	nuclear antigen H731 [Homo sapiens] >pir JC5193 JC5193 nuclear protein H731 - human >sp Q99834 Q99834 NUCLEAR ANTIGEN H731, Length = 458	95	1132	96	HLYG:A31	Lung, Colon
370	831972	p619 [Homo sapiens] >pir S71752 S71752 giant protein p619 - human >sp Q15751 Q15751 P619, Length = 4861	331	855	33	HDJPKK57	Lung, Pancreas, Breast/Ovarian
371	831985		425	805		HDJFP36	Lung, Pancreas, Colon, Breast/Ovarian
372	831986		30	467		HCHC1168	Pancreas, Colon, Breast/Ovarian
373	832010	(AL021918) b3418.1 (Kruppel related Zinc Finger protein 184) [Homo sapiens] >sp O60792 O60792 B3418.1 (KRUPPEL RELATED ZINC FINGER PROTEIN 184), Length = 751	1	348	57	HDJUB44	Lung, Pancreas, Colon

374	832016	C protein (AA 1-159) [Homo sapiens] >pir[S01387]S01387.U1 snRNP protein C - human Length = 159	gi 37543	2	604	100	100	HTT'DG34	Lung, Breast/Ovarian
375	832041	metalloelastase HME (EC 3.4.24.-) - human >sp P39900 COGM_HUMAN MACROPHAGE METALLOELASTASE PRECURSOR (EC 3.4.24.65) (HME) (MATRIX METALLOPROTEINASE-12) (MMP-12). Length = 470	pir A49499 A49499	54	1472	100	100	HD'PG:C33	Lung, Pancreas, Colon
376	832044	5-aminoimidazole-4-carboxamide-1-beta-D- ribo nucleotide transformylase/inosinase [Homo sapiens] >gnl PID d1022617 5-aminoimidazole-4- carboxamide ribonucleotide transformylase [Homo sapiens] >pir JC4642 JC4642 purH bitfunctional enzyme - human >sp Q13856	gnl PID d1012236	1	1794	99	99	HGCOL40	Lung, Pancreas, Colon, Breast/Ovarian
377	832049	proteasome subunit HsC10-II [Homo sapiens] >pir S5504 S5504.1 multicatalytic endopeptidase complex (EC 3.4.99.46) beta chain C10-II - human >sp P49720 PRCT_HUMAN PROTEASOME THETA CHAIN (EC 3.4.99.46) (MACROPAIN THETA CHAIN) (MULTICATALYTIC ENDOPEPTIDASE C	gnl PID d1006190	84	710	99	100	HCF'AU68	Lung, Pancreas, Breast/Ovarian
378	832122			427	846			HCUDT18	Lung, Pancreas, Colon, Breast/Ovarian
379	832148			246	380			HFIHN81	Colon, Breast/Ovarian
380	832197			433	642			HCCQA1151	Pancreas, Breast/Ovarian
381	832237			290	553			HOCTE23	Lung, Colon
382	832246			66	959			HCM5D61	Lung, Pancreas

383	832256	ligand for eph-related receptor tyrosine kinases [Homo sapiens] >gij1809292 putative EPH-related PTK receptor ligand LERK-8 [Homo sapiens] >spjQ15768jEFB3_HUMAN EPHRIN-B3 PRECURSOR (EPH-RELATED RECEPTOR TYROSINE KINASE LIGAND 8) (LERK-8) (EPH-RELATED RECE	gij1469782	1	81	100	100	HBXAC19	Pancreas, Colon, Breast/Ovarian
384	832280	(AF071747) topoisomerase II alpha [Homo sapiens] >spjG3869316jG3869316 TOPOISOMERASE II ALPHA. Length = 1531	gij3869316	2	1141	79	79	INTSQ37	Lung, Colon, Breast/Ovarian
385	832285			1550	1783			HLTBQ50	Lung, Prostate
386	832294			1	666			HBMC80	Lung, Colon
387	832326			472	1131			HJPAF43	Lung, Colon, Breast/Ovarian
388	832333	CENP-B protein [Ovis aries] >spj4945jCENB_SHEEP MAJOR CENTROMERE AUTOANTIGEN B (CENTROMERE PROTEIN B) (CENP-B) (FRAGMENT). Length = 239	gij1016292	3	551	96	96	HCHMS55	Pancreas, Breast/Ovarian
389	832346			295	471			HBAGU45	Colon, Breast/Ovarian
390	832370	HER2 receptor [Homo sapiens] >gij553282 c-erb-2 protein [Homo sapiens] (SUB 737-1031) >gij553332 HER-2/neu [Homo sapiens] (SUB 1-191) >gij183989 HER2 receptor (AA at 3) [Homo sapiens] (SUB 740-910) >gij182169 c-erb B2/neu protein [Homo sapiens] (SUB 1081-	gij306840	2	406	83	83	HFIEC83	Lung, Breast/Ovarian
391	832381			138	539			HAT1AA19	Pancreas, Breast/Ovarian



392	832394	platelet-endothelial tetraspan antigen 3 [Homo sapiens] >sp P48509 C151_HUMAN PLATELET-ENDOTHELIAL TETRASPAN ANTIGEN 3 (PETA-3) (GP27) (MEMBRANE GLYCOPROTEIN SFA-1) (CD151 ANTIGEN). Length = 253	gij541613	2	847	85	85	HEPD21	Lung, Pancreas
393	832454	precursor polypeptide [Homo sapiens] >pir A2597 C2HU complement C2 precursor - human >gi 187765 MHC complement component C2 [Homo sapiens] {SUB 21-46} Length = 752	gij34628	160	357	100	100	HLQB44	Prostate, Breast/Ovarian
394	832465	X box binding protein-1 [Homo sapiens]		1	324			HABC51	Lung, Pancreas
395	832475	>pir A36299 A36299 transcription factor hXB1P-1 - human Length = 260	gij306893	470	817	100	100	HTMJ52	Pancreas, Breast/Ovarian
396	832495	EB1 [Homo sapiens] >pir I52726 I52726 EB1 - human >sp Q15691 Q15691 EB1. Length = 268	gij998357	1	933	100	100	HAIDB85	Lung, Pancreas
397	832498	pyrroline-5-carboxylate synthase [Homo sapiens] >sp G4097816 G4097816 PYRROLINE-5-CARBOXYLATE SYNTHASE. Length = 793	gij4097816	2	1036	95	95	HLTGQ24	Lung, Pancreas
398	832501			736	996			HAGFI57	Lung, Pancreas, Colon
399	832505	protein synthesis factor [Homo sapiens] >sp P47813 F1A_HUMAN EUKARYOTIC TRANSLATION INITIATION FACTOR 1A (EIF-1A) (EIF-4C) {SUB 2-144} Length = 144	gij306725	61	648	100	100	HRABV57	Lung, Pancreas, Prostate
400	832539	protein synthesis initiation factor 4A [Mus musculus] Length = 408	gij673433	472	1125	93	93	HRABO69	Lung, Breast/Ovarian
401	832554	hSCN1 [Homo sapiens] >sp Q99736 Q99736 hSCN1 (PRAGMIENT). Length = 1928	gij2282576	409	927	99	99	HC110X71	Pancreas, Breast/Ovarian

402	832569	(AL023777) rna binding protein	2	667		HFCAIE43	Lung, Colon
403	832578	[Schizosaccharomyces pombe] >sp O74978 O74978 RNA BINDING PROTEIN. Length = 276	123	936	64	HBBD67	Pancreas, Colon, Breast/Ovarian
404	832615		630	992		H2CBK94	Lung, Colon
405	832620		190	297		H2CBG53	Colon, Breast/Ovarian
406	832632	(AC002388) 60S ribosomal protein L30 isolog [Arabidopsis thaliana] >sp O22165 O22165 60S RIBOSOMAL PROTEIN L30 ISOLOG. Length = 159	41	592	69	I2CIBD94	Lung, Colon, Breast/Ovarian
407	832633	putative phospho-beta-glucosidase [Bacillus stearothermophilus] >pir D49898 D49898 cellobiose phosphotransferase system celC - Bacillus stearothermophilus >sp Q45401 Q45401 PUTATIVE PHOSPHO-BETA-GLUCOSIDASE. Length = 245	3	566	52	HWACF51	Pancreas, Breast/Ovarian
408	833483		2	604		IKTCN33	Lung, Breast/Ovarian
409	834574	similar to S. cerevisiae longevity-assurance protein 1 (SP:P38703) [Caenorhabditis elegans] >sp Q17870 Q17870 SIMILAR TO S. CEREVISIAE LONGEVITY-ASSURANCE PROTEIN 1. Length = 362	634	1431	44	HHBF126	Lung, Pancreas, Colon, Breast/Ovarian
410	834859	acidic calponin [human, kidney, Peptide, 329 aa] [Homo sapiens] >pir JC4501 JC4501 acidic calponin - human >sp Q15417 Q15417 ACIDIC CALPONIN. Length = 329	53	541	99	HSTA170	Lung, Pancreas, Colon, Breast/Ovarian

411	834861	factor activating exoenzyme S [Bos taurus] >gil189953 phospholipase A2 [Homo sapiens] >gil899459 14-3-3 protein [Homo sapiens] >pirA38246PSHUAM 14-3-3 protein zeta - human >pirA47389/A47389 14-3-3 protein zeta - bovine >spIP29312143Z_HUMAN 14-3-3 PROT	gil163042	74	967	99	99	HIBXFL41	Lung, Pancreas, Prostate, Breast/Ovarian
412	834890	TRANSCRIPTION FACTOR BTIF3 (RNA POLYMERASE B TRANSCRIPTION FACTOR 3). Length = 204	sp Q64152 BTIF3_M OUSE	70	588	90	91	12CUBT12	Lung, Pancreas, Prostate, Breast/Ovarian
413	835079			151	348			HOELH62	Lung, Pancreas, Breast/Ovarian
414	835554	homologue to sec61 [Rattus rattus] Length = 476	gil206886	121	1287	98	98	HOHHH04	Lung, Pancreas
415	835560			2	574			HE9NK60	Lung, Pancreas
416	835723	immunoglobulin M heavy chain [Homo sapiens] >gil38408 immunoglobulin M heavy chain [Homo sapiens] >pirS37768[S37768 Ig mu chain C region - human Length = 453	gil38406	48	1421	100	100	HLIFY90	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
417	835791	(AJ005890) JM1 [Homo sapiens] >sp O60826 O60826 JM1 PROTEIN, COMPLETE CDS (CLONE LLNI.C110M0111Q7 (RZPD BERLIN) AND L1.NLC110K2140Q7 (RZPD BERLIN)). Length = 627	gn P1D1e1289743	437	1177	87	87	HTXJH25	Pancreas, Breast/Ovarian
418	835817			1369	1554			HAI/AZ17	Lung, Breast/Ovarian
419	835840			2	730			HHEOJ47	Lung, Pancreas
420	836048			2052	2276			HDQDV21	Lung, Prostate

421	836898	human P5 [Homo sapiens] >pir C4369 C4369 P5 protein - human >sp Q15084 ERP5_HUMAN PROBABLE PROTEIN DISULFIDE ISOMERASE P5 PRECURSOR (EC 5.3.4.1). Length = 440	gnl P D d1009061	3	1427	90	90	HWIHPA75	Lung, Pancreas, Colon, Breast/Ovarian
422	836927	(AF027299) protein 4.1-G [Homo sapiens] >sp O4349 O4349  PROTEIN 4.1-G. Length = 1005	gi 2739096	3	1196	84	84	IIDTKY58	Lung, Pancreas
423	837344	SIR [Covpox virus] >sp O72763 O72763 SIR PROTEIN. Length = 210	gnl P D e1289272	38	658	48	58	HLDAG32	Lung, Prostate
424	837789	bikunin [Homo sapiens] >sp O00271 O00271 BIKUNIN. Length = 252	gi 2063529	365	1231	91	91	IIDABR73	Colon, Breast/Ovarian
425	838549	(AL023828) Y17G7B.14 [Caenorhabditis elegans] >sp E1323274 E1323274 Y17G7B.14 PROTEIN. Length = 364	gnl P D e1323274	2	853	42	55	HDQDW56	Lung, Breast/Ovarian
426	838754			437	1198			ITTEQK83	Lung, Pancreas, Breast/Ovarian
427	838768			570	770			HWBCW80	Lung, Pancreas, Breast/Ovarian
428	839486	fibronectin precursor [Homo sapiens] >gi 4096846 fibronectin [Homo sapiens] (SUB 76-454) >gi 4096848 fibronectin [Homo sapiens] (SUB 1892-2103) >gi 182706 fibronectin [Homo sapiens] (SUB 1921-2040) >gi 182684 fibronectin [Homo sapiens] (SUB 2233-2328). Length = 307	gi 31397	2	493	98	98	HS1GC71	Lung, Breast/Ovarian
429	839561	p34 protein [Rattus sp.] >pir S36779 S36779 ribosome-binding protein p34 - rat >sp Q63742 Q63742 P34 PROTEIN. Length = 307	gnl P D d1003291	45	1133	86	88	HUVFB27	Lung, Pancreas, Prostate

430	839816	similar to plasmodium merozite surface antigen precursor (SP:P04933) [Caenorhabditis elegans] >sp Q22585 Q22585 SIMILAR TO PLASMODIUM MEROZITE SURFACE ANTIGEN PRECURSOR. Length = 634	gi 1293808	1	432	46	61	HWADY11	Lung, Breast/Ovarian
431	840068	UMP-CMP kinase [Sus scrofa] >pir JC418 JC4181 cytidylate kinase (EC 2.7.4.14) - pig >sp Q29561 KCY_PIG UMP-CMP KINASE (EC 2.7.4.14) (CYTIDYLATE KINASE) (DEOXYCYTIDYLATE KINASE). Length = 196	gn P D d1006692	2	757	97	99	HE8EH64	Lung, Pancreas, Breast/Ovarian
432	840279	(AF062328) p120 catenin isoform 1A3 [Homo sapiens] >sp O60715 O60715 P120 CATENIN ISOFORMS 1A3, 2A3, 3A3 AND 4A3. >gi 3152823 (AF062322) p120 catenin isoform 2A3 [Homo sapiens] (SUB 55-962) >gi 3152855 (AF062338) p120 catenin isoform 3A3 [Homo sapiens] (S	gi 3152835	219	1493	93	93	HSRB181	Lung, Pancreas
433	840489	connective tissue growth factor [Homo sapiens] >gi 474934 connective tissue growth factor [Homo sapiens] >pir A40551 A40551 connective tissue growth factor - human >sp P29279 CTGF_HUMAN CONNECTIVE TISSUE GROWTH FACTOR PRECURSOR. >gi 984956 connective tiss	gi 180924	1038	1370	100	100	H0JMS29	Lung, Pancreas

434	840338	glycyl tRNA synthetase [Homo sapiens] >pirIA55314 A55314 glycine--tRNA ligase (EC 6.1.1.14) precursor - human >gil600727 glycyl-tRNA synthetase [Homo sapiens] (SUB 55-739) >gil3845409 (AC004976) glycyl tRNA synthetase [Homo sapiens] (SUB 348-739) Length =	gnl PID id1006904	1	2298	100	100	HYAAN81	Lung, Pancreas, Prostate, Breast/Ovarian
435	840545			145	1302			HMCCK73	Lung, Pancreas, Colon, Breast/Ovarian
436	840549			1	492			HWIIGB33	Lung, Prostate
437	840551	IgG Fc binding protein [Homo sapiens] Length = 5405	gnl PID id1020288	3	1409	93	93	HWLKM77	Lung, Prostate, Colon
438	840557			346	1014			H6EDS19	Prostate, Colon
439	840561	putative [Mus musculus] >pir S15785 S15785 heat-stable antigen-related hypothetical protein HSA-C-mouse >sp Q61692 Q61692 HSA-C GENE CODING FOR HEAT STABLE ANTIGEN. Length = 141	gil51442	385	495	48	72	HLIBZ07	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
440	840562	(AB008549) type 1 procollagen C-proteinase enhancer protein [Homo sapiens] >gil3135316 (AF053356) PCOLCE [Homo sapiens] >sp O14550 O14550 TYPE 1 PROCOLLAGEN C-PROTEINASE ENHANCER PROTEIN. Length = 449	gil2589011	103	1476	96	96	INSDD65	Lung, Pancreas, Prostate, Colon
441	840564	PQ-rich protein [Homo sapiens] >pir S5822 S5822 PQ-rich protein - human >sp Q15184 Q15184 PQ-RICH PROTEIN. Length = 400	gil929660	2	688	67	68	HPIDB01	Lung, Pancreas

442	840572	putative [Homo sapiens] >pir I54339 I54339 proto-oncogene - human >sp P35226 BMII_HUMAN DNA-BINDING PROTEIN BMI-1. Length = 326	gi 291873	3	1172	95	95	HTGAZ34	Prostate, Colon
443	840600			3	119			HYAIB30	Prostate, Breast/Ovarian
444	840604	Similarity to Mouse A-RAF proto-oncogene serine/threonine-protein kinase (SW:KRAA_MOUSE):	gn P1D1e1344589	1	1359	82	87	HWLHN58	Lung, Pancreas, Prostate, Breast/Ovarian
445	840608	ollactomedin [Rana catesbeiana] >pir A47442 A47442 ollactomedin precursor - bullfrog >sp Q0708 OLFMRANCA OLFACOMEDIN PRECURSOR (OLFACTORY MUCUS PROTEIN). Length = 464	gi 294502	200	1549	55	75	HWLEFY46	Pancreas, Colon
446	840620			776	1267			HTXGB37	Lung, Prostate
447	840625			138	257			HTXDT74	Lung, Prostate
448	840626	nicotinamide N-methyltransferase [Homo sapiens] >gi 1063610 nicotinamide N-methyltransferase [Homo sapiens] >pir A54060 A54060 nicotinamide N-methyltransferase (EC 2.1.1.1) - human >sp P40261 NNMT_HUMAN NICOTINAMIDE N-METHYLTRANSFERASE (EC 2.1.1.1). Length = 196	gi 494989	485	1282	100	100	HTUAS90	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
449	840638			16	351			HTTIDV02	Prostate, Breast/Ovarian
450	840649	BL34=B cell activation gene [human, Peptide, 196 aa] [Homo sapiens] >pir I56165 I56165 B cell activation protein BL34 - human Length = 196	bbs 129951	1	651	100	100	HTWCY84	Lung, Prostate
451	840651			2	706			HTTAD76	Pancreas, Prostate

452	840666			2	826		HTOAF86	Lung, Prostate
453	840681			157	2187		HTAER63	Lung, Prostate
454	840682	siah binding protein 1 [Homo sapiens] >sp Q99628 Q99628 SIAH BINDING PROTEIN 1 (FRAGMENT). Length = 541	gil1809248	1	1734	99	HE9PW64	Lung, Breast/Ovarian
455	840684			3	539		HTGBT14	Pancreas, Prostate, Breast/Ovarian
456	840697			96	560		HTECA52	Lung, Prostate
457	840698	t-complex-type molecular chaperone TCP1 - human >gil339211 t-complex 1 protein [Homo sapiens] {SUB 308-365} Length = 536	pirS10486 S10486	507	1853	97	HDABW50	Pancreas, Prostate
458	840708			1200	1487		HTEAI73	Lung, Prostate
459	840714	(AF053304) mitotic checkpoint component Bub3 [Homo sapiens] >gil2921873 (AF047472) spleen mitotic checkpoint BUB3 [Homo sapiens] >gil3639060 (AF081496) kinetochore protein BUB3 [Homo sapiens] >sp O43684 O43684 SPLEEN MITOTIC CHECKPOINT BUB3. Length = 328	gil2981231	175	1170	100	HTEGU90	Lung, Pancreas, Prostate, Breast/Ovarian
460	840716	(AC005326) asparagine synthetase [Homo sapiens] >sp G334171 G334171 5 ASPARAGINE SYNTHETASE. >gil703119 asparagine synthetase [Homo sapiens] {SUB 1-83} Length = 561	gil3341715	166	1860	94	HSYAI64	Lung, Prostate, Colon, Breast/Ovarian
461	840721			2	1324		HSUSE92	Lung, Pancreas, Prostate, Colon



462	840735	(AC002425) Gene product with similarity to Rat P8 [Homo sapiens] >gi 3202004 (AF069073) P8 protein [Homo sapiens] >gi 3202006 (AF069074) P8 protein [Homo sapiens] >sp O60356 O60356 GENE PRODUCT WITH SIMILARITY TO RAT P8. Length = 82	gi 2947054	111	392	64	64	HSRDN44	Lung, Pancreas, Prostate, Breast/Ovarian
463	840738			985	1230			ITTOJK11	Prostate, Colon
464	840745	52-kD SS-A/Ro autoantigen [Homo sapiens] Length = 475	gi 338490	2	694	46	63	HS5GC06	Lung, Prostate, Colon
465	840747	(AC004522) Zn-alpha2-glycoprotein [Homo sapiens] >sp O60386 O60386 ZN-ALPHA2-GLYCOPROTEIN. Length = 334	gi 3006228	368	877	95	95	HLDEL02	Lung, Pancreas, Breast/Ovarian
466	840756	(AB005624) rig-analog DNA-binding protein [Sus scrofa] >gi 306898 rig-analog protein (putative); putative [Homo sapiens] >gi 337416 human homologue of rat insulinoma gene (rig); putative [Homo sapiens] >gi 305361 Rig DNA-binding protein (putative); putati	gn PID d1022359	148	480	97	97	HCHBQ33	Lung, Pancreas, Colon, Breast/Ovarian
467	840776	Notch3 [Homo sapiens] >sp G2668592 G2668592 NOTCH3. Length = 2321	gi 2668592	2	364	82	82	HSKJ222	Lung, Breast/Ovarian
468	840784	aldehyde dehydrogenase 6 [Homo sapiens] >pir A55684 A55684 aldehyde dehydrogenase (NAD+) (EC 1.2.1.3) 6 precursor, salivary - human >sp P47895 DHA6_HUMAN ALDEHYDE DEHYDROGENASE 6 (EC 1.2.1.5). Length = 512	gi 544482	1	618	94	95	HSKAC75	Lung, Prostate, Colon, Breast/Ovarian

469	840788	P1 gene for c subunit of human mitochondrial ATP synthase gene product [Homo sapiens] >gnl PID d1002920 ATP synthase subunit c precursor [Homo sapiens] >pir S34066 S34066 H+-transporting ATP synthase (EC 3.6.1.34) lipid-binding protein P1 precursor, mitoc	g 38430	59	484	85	85	HIFUM32	Lung, Prostate, Colon, Breast/Ovarian
470	840794			162	1646			H0H128	Lung, Pancreas, Prostate, Colon
471	840797	OSF-2p1 [Homo sapiens] >pir S3611 S3611 osteoblast-specific factor 2 - human >sp Q15064 Q15064 OSF-2P1. Length = 779	gnl PID d1003341	2	2371	93	93	HDTM52	Pancreas, Breast/Ovarian
472	840799			292	510			HWBC148	Lung, Pancreas, Colon, Breast/Ovarian
473	840818	translational initiation factor eIF-2, alpha subunit [Homo sapiens] >sp P05198 P2A_HUMAN EUKARYOTIC TRANSLATION INITIATION FACTOR 2 ALPHA SUBUNIT (EIF-2, ALPHA), {SUB 2-315} Length = 315	g 181995	3	806	100	100	H1H1M68	Lung, Prostate
474	840822	fatty acid synthase [Homo sapiens] >pir G01880 G01880 fatty-acid synthase (EC 2.3.1.85) - human >sp Q16702 Q16702 FATTY ACID SYNTHASE (EC 2.3.1.85) (FATTY-ACID SYNTHASE). Length = 2509	g 915392	1423	2367	93	93	HGH1X28	Lung, Prostate, Colon, Breast/Ovarian
475	840830	diubiquitin [Homo sapiens] >sp O15205 O15205 DIUBIQUITIN. Length = 165	gnl PID e321293	1	573	99	99	HFXHP85	Pancreas, Prostate

476	840846	glutathione S-transferase Ha subunit 1 (EC 2.5.1.18) [Homo sapiens] >gil306815 glutathione S-transferase (GST, EC 2.5.1.18) [Homo sapiens] >gil306809 glutathione S-transferase [Homo sapiens] >bbs76373 glutathione S-transferase Ha1 subunit [EC 2.5.1.18]	gil306810	144	833	95	95	HFVHP57	Prostate, Breast/Ovarian
477	840848	prohibitin [human, Peptide: 272 aa] [Homo sapiens] >pir152690 52690 prohibitin - human >sp135232 PHB_HUMAN PROHIBITIN. Length = 272	bbs85658	81	917	93	93	HHHHIM75	Lung, Pancreas, Prostate, Breast/Ovarian
478	840860	NAP [Homo sapiens] >pir154051 154051 nucleosome assembly protein 1-like 1 - human >sp155209 NPL1_HUMAN NUCLEOSOME ASSEMBLY PROTEIN 1-LIKE 1 (NAP-1 RELATED PROTEIN). Length = 391	gil189067	92	1309	80	80	HDTL139	Lung, Pancreas, Colon, Breast/Ovarian
479	840861	(A1021546) Cytochrome C Oxidase Polypeptide VIa-liver precursor (EC 1.9.3.1) [Homo sapiens] >sp104371 104371 CYTOCHROME C OXIDASE POLYPEPTIDE VIA-LIVER PRECURSOR (EC 1.9.3.1) (CYTOCHROME-C OXIDASE) (CYTOCHROME OXIDASE) (CYTOCHROME A(3)) (CYTOCHROME AA(3))	gnl1P1Dje1248288	2	520	100	100	HFPBO29	Lung, Prostate, Breast/Ovarian
480	840871	DNA polymerase delta small subunit [Homo sapiens] >pir138950 138950 DNA-directed DNA polymerase (EC 2.7.7.7) delta regulatory chain - human >sp149005 DPD2_HUMAN DNA POLYMERASE DELTA SMALL SUBUNIT (EC 2.7.7.7). Length = 469	gil1008458	2	628	99	99	HSDJX61	Pancreas, Colon, Breast/Ovarian

481	840874	secreted cyclophilin-like protein [Homo sapiens] >gil181335 cyclophilin D [Homo sapiens] {SUB 9-216} >gil181250 cyclophilin [Homo sapiens] {SUB 10-216} Length = 216	gil137999	1	873	94	94	11FTDK64	Lung, Prostate
482	840878	unknown [Homo sapiens] >sp P41271 DAN_HUMAN ZINC FINGER PROTEIN DAN (N03). Length = 180	gnl P D d1006216	227	676	99	100	H2MBT19	Lung, Pancreas, Colon, Breast/Ovarian
483	840880			153	320			HFINK16	Prostate, Colon, Breast/Ovarian
484	840884	mutY homolog [Homo sapiens] >sp Q15830 Q15830 MUTY HOMOLOG. Length = 535	gil1458228	108	1565	99	99	11BCH118	Lung, Prostate
485	840907			103	366			HETAD58	Pancreas, Prostate
486	840926			76	1347			11-ONTT66	Lung, Pancreas, Prostate
487	840932	ATP synthase beta subunit precursor [Homo sapiens] >pir A33370 A33370 H+-transporting ATP synthase (EC 3.6.1.34) beta chain precursor, mitochondrial - human >sp P06576 ATPB_HUMAN ATP SYNTHASE BETA CHAIN, MITOCHONDRIAL PRECURSOR (EC 3.6.1.34). >gil28931 be	gil179281	2	1675	93	93	11FB389	Lung, Prostate
488	840940	carbonyl reductase [Sus scrofa] >pir JN0703 JN0703 carbonyl reductase (NADPH) (EC 1.1.1.184) - pig >sp Q29529 CBR2_PIG LUNG CARBONYL REDUCTASE [NADPH] (EC 1.1.1.184) (NADPH-DEPENDENT CARBONYL REDUCTASE) (LCR). Length = 244	gnl P D d1004479	277	678	61	76	11CHN132	Pancreas, Breast/Ovarian

489	840947		2	565		HEG4N45	Lung, Pancreas, Prostate, Breast/Ovarian
490	840959	signal peptidase complex 25 kDa subunit [Canis familiaris] >pirA55012/A55012 signal peptidase 25k chain - dog Length = 226	2	712	99	HE8AD53	Lung, Pancreas, Prostate, Breast/Ovarian
491	840964		177	344		HE8UK92	Prostate, Colon
492	840979	transcription factor-like protein 4 - human Length = 298	11	631	99	HE9HD45	Lung, Pancreas, Prostate, Colon
493	840984	p167 [Homo sapiens] >gnlPID[d1010130 The KIAA0139 gene product is related to mouse centrosomin B. [Homo sapiens] >gil2501783 translation initiation factor 3 large subunit [Homo sapiens] >spQ14152/Q14152 KIAA0139 PROTEIN. >gil1399801 p167 [Homo sapiens]	3	3017	91	HE8OC40	Lung, Pancreas, Prostate, Breast/Ovarian
494	840986		1	693		HE8TB60	Pancreas, Prostate, Colon
495	840988		1	465		HE8CQ04	Pancreas, Prostate, Breast/Ovarian
496	840990	(AB010415) dTDP-4-keto-L-rhamnose reductase [Actinobacillus actinomycetencorcomians] >spO66251/O66251 DTD-4-KETO-L-RHAMNOSE REDUCTASE. Length = 294	157	1140	32	HE8AM92	Pancreas, Prostate
497	840992	nidogen gene product [Homo sapiens] Length = 1246	3	194	96	HE8BX38	Lung, Prostate, Colon, Breast/Ovarian
498	841009	sin3 associated polypeptide p18 [Homo sapiens] >spO00422/O00422 SIN3 ASSOCIATED POLYPEPTIDE P18. Length = 153	59	523	92	IIDTGP88	Lung, Pancreas, Prostate, Colon, Breast/Ovarian

499	841012	ribosomal protein L39 [Homo sapiens] >gnl PID d1012131 ribosomal protein L39 [Homo sapiens] >gij 575382 ribosomal protein L39 [Rattus norvegicus] >pir JC4229 R6RT39 ribosomal protein L39 - rat >pir G102654 G102654 ribosomal protein L39 - human Length = 51	gij 1373419	2	217	100	100	HSKXIP01	Lung, Pancreas, Breast/Ovarian
500	841016	connexin 43 [Homo sapiens] >gij 29917 gap junction protein (AA 1-382) [Homo sapiens] >pir A35853 A35853 gap junction protein Cx43, cardiac - human >sp P17302 CX41_HUMAN GAP JUNCTION ALPHA-1 PROTEIN (CONNEXIN 43) (CX43) (GAP JUNCTION 43 KD HEART PROTEIN). [	gij 181209	1	810	94	94	HD1D1113	Lung, Pancreas, Prostate, Colon
501	841017			402	683			HE2AY01	Lung, Prostate
502	841021			983	1357			HNAAE75	Lung, Pancreas, Colon, Breast/Ovarian
503	841032	(AB000910) ribosomal protein [Sus scrofa] >gij 1684917 L44-like ribosomal protein [Homo sapiens] >gij 1666702 ribosomal protein [Mus musculus] >gij 206732 ribosomal protein L36a [Rattus norvegicus] >pir A29820 R6RT36 ribosomal protein L36a - rat Length = 106	gnl PID d1019960	3	395	100	100	HDQAD36	Lung, Colon
504	841051			656	880			HD1DC65	Lung, Pancreas
505	841064	small subunit ribonucleotide reductase [Homo sapiens] >pir S25854 S25854 ribonucleoside-diphosphate reductase (EC 1.17.4.1) small chain - human Length = 389	gij 36155	6	1244	96	96	HD1ME32	Prostate, Colon, Breast/Ovarian

506	841069		81	809		HDPM148	Prostate, Breast/Ovarian
507	841072	regulatory protein [Mus musculus] >gi452276 nplcf.1 [Mus musculus] >pir4869148691 regulatory protein - mouse >sp064322[NPD1_MOUSE_NPDC-1 PROTEIN PRECURSOR. Length = 332	162	1139	91	HDPC181	Lung, Prostate, Colon, Breast/Ovarian
508	841078		521	706		HDPKD92	Pancreas, Prostate
509	841080	HCNGP gene product [Mus musculus] >pirS26660[S26660 HCNGP protein - mouse >sp02614[HCNGP_MOUSE TRANSCRIPTIONAL REGULATOR PROTEIN HCNGP. Length = 308	1	936	88	HDPIR07	Prostate, Breast/Ovarian
510	841088	quinone oxidoreductase [Homo sapiens] >gi516534 quinone oxidoreductase2 [Homo sapiens] >pirA32667[A32667 NAD(P)H dehydrogenase (quinone) (EC 1.6.99.2) - human Length = 231	320	1096	100	HDPEX64	Lung, Pancreas, Prostate, Breast/Ovarian
511	841092		1187	1402		HJMBH15	Lung, Colon
512	841095	L protein (AA 1-558) [Homo sapiens] >pirA33616[A33616 heterogeneous ribonuclear particle protein L - human Length = 558	2	904	84	H2LAT31	Lung, Pancreas, Colon, Breast/Ovarian
513	841096	(AB013357) 49 kDa zinc finger protein [Mus musculus] Length = 460	510	1907	80	HCF1J15	Lung, Pancreas, Breast/Ovarian
514	841102		2	256		HDLAV12	Lung, Pancreas, Prostate, Breast/Ovarian
515	841104	zinc finger protein [Homo sapiens] >pirS35305[S35305 finger protein ZNF91 - human Length = 1191	712	2451	54	HDLAB16	Pancreas, Prostate, Breast/Ovarian
516	841108	factor XIII a subunit [Homo sapiens] Length = 732	3	1838	99	HDPEE82	Lung, Pancreas, Colon

517	841118				320	487			IIDLAE34	Lung, Pancreas, Prostate
518	841119	C11 protein [Homo sapiens] >gil1890300 eukaryotic release factor 1 [Homo sapiens] >gnlPIDjc118068 C11 protein [Mesocricetus auratus] >pir[S50853]S50853 translation releasing factor eRF-1 - human >sp[P46055]ERF1_HUMAN EUKARYOTIC PEPTIDE CHAIN RELEASE FACT	gnlPIDjc118910	123	100	100			HIDPAE95	Lung, Pancreas, Prostate
519	841124	similar to deoxyribose-phosphate aldolase [Caenorhabditis elegans] >sp[Q19264]DEOC_CAEEL PUTATIVE DEOXYRIBOSE-PHOSPHATE ALDOLASE (EC: 4.1.2.4) (PHOSPHODEOXYRIBOALDOLASE) (DEOXYRIBOALDOLASE). Length = 303	gil1019952	2	338	62	80		HDAAB17	Prostate, Colon
520	841137	(AF096285) serine-threonine kinase receptor- associated protein [Mus musculus] >sp[G4063383]G4063383 SERINE-THREONINE KINASE RECEPTOR-ASSOCIATED PROTEIN. Length = 351	gil4063383	3	848	98	99		IIDAAAP84	Lung, Pancreas, Prostate, Breast/Ovarian
521	841143	fibrillarin [Homo sapiens] >pir[A38712]A38712 fibrillarin - human >gil3399667 (AC005393) FBR1_HUMAN; 34 KD NUCLEOLAR SCLERODERMA ANTIGEN [Homo sapiens] (SUB 4-321) Length = 321	gil31395	39	1040	100	100		HCRMJ87	Pancreas, Prostate, Breast/Ovarian
522	841148			2	1807				HCRNF38	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
523	841149			324	797				HCRBS04	Prostate, Breast/Ovarian



524	841151	keratin [Carassius auratus] Length = 455	gil212995	2	1399	45	64	HCRNY54	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
525	841155			103	561			HCTIOF85	Prostate, Breast/Ovarian
526	841161	(A8014458) ubiquitin specific protease [Homo sapiens] >sp D1035685 D1035685 UBIQUITIN SPECIFIC PROTEASE. Length = 785	gnl P D d1035685	3	1199	95	95	HCLCA56	Lung, Prostate
527	841162	set1 [Homo sapiens] >pir A57984 A45018 template activating factor-1, splice form beta - human Length = 277	gil338039	284	1063	99	100	HICWIR92	Prostate, Colon
528	841163	histone H2A [Mus musculus domesticus] >pir S45110 S45110 histone H2A - mouse >sp Q64426 Q64426 HISTONE H2A (FRAGMENT). Length = 137	gil817939	201	665	100	100	HBMIBF44	Pancreas, Breast/Ovarian
529	841169			21	440			HCTIOF83	Lung, Prostate, Colon, Breast/Ovarian
530	841172	CLN3 protein [Homo sapiens] >gnl P D c283670 CLN3 protein [Homo sapiens] >gil2947055 (AC002425) CLN3 [Homo sapiens] >gil3337387 (AC002544) CLN3 [Homo sapiens] >gil4102729 (AF015593) CLN3 protein [Homo sapiens] >pir A57219 A57219 Batten disease-related prot	gil1039423	291	740	100	100	HCTIAC93	Prostate, Breast/Ovarian
531	841174	zinc finger protein 7 (ZFP7) [Homo sapiens] >pir A34612 A34612 zinc finger protein ZNF7 - human Length = 686	gil340446	3	386	98	98	HCHAW34	Prostate, Breast/Ovarian

532	841179	(AF069517) RNA binding protein DEF-3 [Homo sapiens] >sp O75524 O75524 RNA BINDING PROTEIN DEF-3. Length = 1123	gij3212101	549	1742	85	85	HCHBU86	Lung, Pancreas, Prostate
533	841183	keratin 18 [Homo sapiens] >gij307081 keratin 18 precursor [Homo sapiens] >gij34037 cytokeratin 18 [Homo sapiens] >pir S05481 S05481 keratin 18, type I, cytoskeletal - human >sp P05783 K1CR_HUMAN KERATIN, TYPE I CYTOSKELETAL 18 (CYTOKERATIN 18) (K18) (CK 1	gij386844	1	501	80	92	HCHUE20	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
534	841186	(A1006215) CMP-N-acetylneuraminic acid synthetase [Mus musculus] >sp O88719 O88719 CMP-N-ACETYLNEURAMINIC ACID SYNTHETASE (EC 2.7.7.43) (ACYLNEURAMINATE CYTIDYLTRANSFERASE) (CMP-SIALATE PYROPHOSPHORYLASE) (CMP-SIALATE SYNTHASE). Length = 432	gnl P1Dle1314953	78	1421	95	97	HCFEG26	Lung, Prostate
535	841204	similar to beta-mannosyltransferase [Caenorhabditis elegans] >sp Q22797 Q22797 SIMILAR TO BETA-MANNOSYLTRANSFERASE. Length = 487	gij470340	1	1407	51	72	HCEFZ02	Lung, Pancreas, Prostate, Colon
536	841206	(AF062484) SDP8 [Mus musculus]		251	1192			HCEEM52	Lung, Prostate
537	841207	>sp O70493 O70493 SDP8. Length = 165	gij3126981	193	585	41	63	IIMTAR23	Prostate, Colon
538	841211	(AC004908) zinc finger protein from gene of uncertain exon structure; similar to Q99076 (PID:g3025333) [Homo sapiens] Length = 430	gij4159888	110	766	47	62	HCEDM42	Prostate, Breast/Ovarian

539	841225	membrane protein [Homo sapiens] >gi11048989 CD9 antigen [Homo sapiens] >gi34769 MRP-1 (motility related protein) [Homo sapiens] >hbsj131345 CD9 antigen [human, leukocytes, Peptide, 228 aa] [Homo sapiens] >pirA46123/A40402 CD9 antigen - human >sp P21926	gi1508496	41	865	88	88	HCKRB01	Lung, Pancreas, Prostate, Colon
540	841229	P1cdc47 [Homo sapiens] >pirS70583/S70583 CDC47 homolog - human >sp P33993 MCM7_HUMAN DNA REPLICATION LICENSING FACTOR MCM7 (CDC47 HOMOLOG) (P1.I-MCM3) >gu P D d 1006386 hMCM2 [Homo sapiens] (SUB) 177-719; Length = 719	gu P D d 1010177	1	2298	98	98	HCEID58	Lung, Pancreas, Prostate, Breast/Ovarian
541	841237	NAD(P)H:menadione oxidoreductase [Homo sapiens] >gi1189292 NAD(P)H:quinone oxidoreductase [Homo sapiens] >pirA41135/A30879 NAD(P)H dehydrogenase (quinone) (EC 1.6.99.2) 1 - human >sp P15559 DHOU_HUMAN NAD(P)H DEHYDROGENASE (QUINONE) 1 (EC 1.6.99.2) (QUINON	gi1189246	141	1028	95	95	HBMFA19	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
542	841241	Thy-1 [Homo sapiens] >pirA02106/TDHU Thy-1 membrane glycoprotein precursor - human Length = 161	gi1339683	128	622	86	87	HIBXFG67	Lung, Pancreas, Prostate, Breast/Ovarian
543	841259	(AD001528) spermidine aminopropyltransferase [Homo sapiens] >sp O00544 O00544 SPERMIDINE AMINOPROPYLTRANSFERASE. Length = 366	gi12198557	3	1199	93	93	HCEIC53	Lung, Pancreas, Prostate, Breast/Ovarian

544	841260	FKBP51 [Homo sapiens] >pir C5422 C5422 FK506-binding protein, FKBP51 - human >sp Q13451 FKB5_HUMAN 51 KD FK506- BINDING PROTEIN (FKBP51) (PEPTIDYL- PROLYL CIS-TRANS ISOMERASE) (EC 5.2.1.8) (PIPIASE) (ROTAMASE) (54 KD PROGESTERONE RECEPTOR-ASSOCIATED IMMUNO	gi 1916641	3	863	88	91	HBOJDM14	Lung, Prostate
545	841264			1	618			HBJHU33	Lung, Pancreas, Prostate
546	841275	Lutheran blood group glycoprotein [Homo sapiens] >pir I38000 I38000 Lutheran blood group glycoprotein precursor - human >sp P50895 LU_HUMAN LUTHERAN BLOOD GROUP GLYCOPROTEIN PRECURSOR (B- CAM CELL SURFACE GLYCOPROTEIN) (AUBERGER B ANTIGEN) (F8/G253 ANTIGEN	gi 603560	2	1183	89	89	HBCMO35	Prostate, Breast/Ovarian
547	841311	(AF019661) zeta proteasome chain; PSMA5 [Mus musculus] >sp G3805976 G3805976 ZETA PROTEASOME CHAIN. Length = 241	gi 3805976	45	836	100	100	HCFMY64	Lung, Pancreas, Prostate, Breast/Ovarian
548	841313	neuronal protein 15.6 [unidentified] >sp O09111 O09111 NEURONAL PROTEIN 15.6. Length = 133	gn PID c274746	11	544	75	82	HBGNM82	Lung, Prostate, Colon, Breast/Ovarian
549	841317			1155	1553			HAPSG63	Lung, Prostate
550	841322	unnamed protein product [unidentified] >gi 496609 basic transcription factor 2, 44 kD subunit [Homo sapiens] >sp Q13888 Q13888 BASIC TRANSCRIPTION FACTOR 2, 44 KD SUBUNIT (BASIC TRANSCRIPTION FACTOR 2 P44) (FRAGMENT). >gi 1737212 basic transcription factor	gn PID c306259	200	1402	95	95	HANGIE23	Pancreas, Prostate

551	841331		2	955		HHFJ119	Lung, Breast/Ovarian
552	841332	alpha-2-macroglobulin precursor [Homo sapiens] >pir A94033 MAHU alpha-2-macroglobulin precursor - human >sp P01023 A2MG1 HUMAN ALPHA-2-MACROGLOBULIN PRECURSOR (ALPHA-2-M) >gil823615 alpha2-macroglobulin [Homo sapiens] {SUB 672-746} Length = 1474	2	3856	98	HAPQO79	Lung, Prostate
553	841338		1139	1363		HABUJ58	Pancreas, Prostate
554	841345	yeast methionyl-tRNA synthetase homolog [Homo sapiens] >pir JC5224 JC5224 methionine--tRNA ligase (EC 6.1.1.10) - human >gil804996 mitoxantrone-resistance associated gene [Homo sapiens] {SUB 423-900} Length = 900	2	2761	94	HAAJQ46	Lung, Pancreas, Prostate, Breast/Ovarian
555	841349		151	1578		HMAWFM73	Lung, Pancreas, Prostate, Breast/Ovarian
556	841355	glucose regulated protein 94 (400 AA) [Musoricetus auratus] >pir A26258 A26258 endoplasmic - hamster (fragment) >sp P08712 ENPL_MESAU ENDOPLASMIN (94 KD GLUCOSE-REGULATED PROTEIN) (GRP94) (FRAGMENT). Length = 400	2	562	96	HAAJAA78	Prostate, Breast/Ovarian
557	841417	arginine-rich nuclear protein [Homo sapiens] >pir A40988 A40988 54K arginine-rich nuclear protein - human >sp Q05519 Q05519 ARGININE- RICH 54 KD NUCLEAR PROTEIN. Length = 484	708	1835	73	HNTCT110	Lung, Pancreas, Colon, Breast/Ovarian

558	841548		278	613		HBXDN79	Lung, Breast/Ovarian
559	841632	(AF073298) 4F5rel [Homo sapiens] >gij3641536 (AF073297) 4F5rel [Mus musculus] >sp Q75918 Q75918 4F5REL >sp O88891 O88891 4F5REL. Length = 59	49	255	100	HTLGV25	Lung, Breast/Ovarian
560	841662	HYA22 protein - human. Length = 338	2	532	78	HLQCP61	Prostate, Colon
561	841771		901	1146		HSYDN46	Lung, Pancreas
562	841827	RT1* [Homo sapiens] >gij3046386 (AF004162) nickel-specific induction protein [Homo sapiens] >sp Q92597 Q92597 RTP, COMPLETE CDS. Length = 394	358	1110	97	IIIIFD26	Pancreas, Prostate
563	841835		1232	1612		HWLJT34	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
564	842259		2	691		HHFGF32	Lung, Pancreas, Prostate, Colon
565	842463		600	836		HEIYJY08	Lung, Pancreas
566	842595	ERp28 [Homo sapiens] >sp P30040 ER29_HUMAN ENDOPLASMIC RETICULUM PROTEIN ERP29 PRECURSOR (ERP31) (ERP28). >sp E131495 E1314951 ERP28 PRECURSOR. Length = 261	50	916	92	HUFAB73	Lung, Breast/Ovarian
567	842722		2	1465		HYABB24	Lung, Pancreas, Prostate, Breast/Ovarian
568	842815		780	971		HPMSG47	Pancreas, Colon
569	842818	(AF038954) vacuolar H(+)-ATPase subunit [Homo sapiens] >sp Q75348 Q75348 VACUOLAR H(+)- ATPASE SUBUNIT. Length = 118	91	477	79	HSKJF03	Lung, Pancreas, Prostate, Breast/Ovarian

570	843251	(AF057297) ornithine decarboxylase antizyme 2 [Homo sapiens] >gi 3766170 (AF057297) ornithine decarboxylase antizyme 2 [Homo sapiens] >sp G3766170 G3766170 ORNITHINE DECARBOXYLASE ANTIZYME 2. >gnl PID d1020346 product is unknown; seizure-related gene [Mus]	gi 3766170	215	745	92	92	HTLIF83	Lung, Breast/Ovarian
571	843422			563	898			HISCW60	Lung, Pancreas, Colon, Breast/Ovarian
572	843784			1307	1864			HCECS78	Lung, Pancreas
573	844017			243	566			HKABG31	Lung, Colon
574	844138	Epithelin 1 & 2 [Homo sapiens] >gi 3005730 (AF055008) epithelin 1 and 2 [Homo sapiens] >pir JC1284 GYHU granulin precursor - human >sp G3005730 G3005730 EPITHELIN 1 AND 2. Length = 593	gi 31193	104	1966	100	100	HDPWW59	Lung, Breast/Ovarian
575	844166	(AF039689) antigen NY-CO-7 [Homo sapiens] >sp O60526 O60526 ANTIGEN NY-CO-7. Length = 303	gi 3170178	1	1020	94	94	HABAE22	Lung, Pancreas, Prostate, Breast/Ovarian
576	844194			3	707			HE8PB56	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
577	844394			378	635			HHIUP26	Lung, Pancreas, Breast/Ovarian
578	844450	weak similarity to rat TEGT protein (GI-456207) [Caenorhabditis elegans] >sp p91373 p91373 SIMILARITY TO RAT TEGT PROTEIN. Length = 342	gi 1825601	113	1165	61	78	HTXOX92	Lung, Pancreas
579	844534			2	244			HCE3165	Lung, Pancreas, Breast/Ovarian

580	844535	isocitrate dehydrogenase (NADP+) [Homo sapiens] >pir S57499 S57499 isocitrate dehydrogenase (NADP+) (EC 1.1.1.42) precursor, mitochondrial - human >sp P48735 IDHP_HUMAN ISOCITRATE DEHYDROGENASE [NADP] MITOCHONDRIAL PRECURSOR (EC 1.1.1.42) (OXALOSUCCINATE	gi 872121	3	1454	96	96	HCWCI:38	Lung, Breast/Ovarian
581	844644	(AJ002308) synaptogyrin 2 [Homo sapiens] >sp O43760 O43760 SYNAPTOGYRIN 2. Length = 224	gn P Dle1254903	1	720	91	91	HDPBQ51	Lung, Breast/Ovarian
582	844653	immunoglobulin lambda light chain gene product [Homo sapiens] >pir S25745 S25745 Ig lambda chain - human (fragment) Length = 226	gi 33718	1	732	89	91	HCKQC91	Lung, Pancreas, Colon
583	844659	cathepsin D [Homo sapiens] >gi 29678 precursor polypeptide (AA -20 to 392) [Homo sapiens] >gi 181180 preprocathepsin D [Homo sapiens] >pir A2577 K11HUJD cathepsin D (EC 3.4.23.5) precursor - human >sp P07339 CATD_HUMAN CATHEPSIN D PRECURSOR (EC 3.4.23.5).	gi 179948	21	539	94	94	HLDDXQ71	Lung, Breast/Ovarian
584	844796			2	1054			HE6BS09	Colon, Breast/Ovarian
585	844812	(AF040642) contains similarity to transacylases [Caenorhabditis elegans] >sp O44793 O44793 CSOD2.7 PROTEIN. Length = 895	gi 2746788	13	1542	33	59	HDPFV13	Lung, Pancreas
586	844894	E25B protein [Mus musculus] >sp O89051 O89051 E25B PROTEIN. Length = 266	gi 3746127	66	1013	96	99	HCLBO47	Lung, Pancreas, Colon



587	845361	phosphoglycerate kinase (EC 2.7.2.3) [Homo sapiens] >gi387021 phosphoglycerate kinase [Homo sapiens] >gi35435 coding sequence [Homo sapiens] >pir159050 KIHUG phosphoglycerate kinase (EC 2.7.2.3) - human length = 417	gi387020	39	1232	100	100	HHHCU91	Pancreas, Colon
588	845620			508	1254			HWIIGQ46	Lung, Pancreas, Prostate, Breast/Ovarian
589	845639	leukocyte antigen F [Homo sapiens] >gi3273731 (AF055066) MHC class I HLA-F [Homo sapiens] >pirA60384/A60384 MHC class I histocompatibility antigen HLA-F alpha chain Dev3 precursor - human >spP30511HLAF_HUMAN HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, F A	gi312407	2	814	90	90	HCFNA68	Lung, Pancreas, Colon, Breast/Ovarian
590	845660	Cyr61 [Homo sapiens] >gnlP1D1e311857 Gig1 protein [Homo sapiens] >gi2196782 (AF003594) growth-factor inducible immediate early gene product CYR61 [Homo sapiens] >gnlP1D1e1249319 hCYR61 protein [Homo sapiens] >spO00622CYR6_HUMAN CYR61 PROTEIN PRECURSOR	gi2130527	1	1365	91	91	HKAIW79	Lung, Pancreas, Prostate, Breast/Ovarian
591	845720			1	261			HKDAF83	Lung, Breast/Ovarian
592	845785			180	509			HSCDT09	Pancreas, Colon, Breast/Ovarian
593	845897			1369	1677			HAADAR09	Pancreas, Breast/Ovarian

594	845922	beta actin [Ovis aries] >gi 2661136 (AF035774) beta actin [Equus caballus] >gi 3320892 (AF076190) beta-actin [Trichosurus vulpecula] >gi 177968 cytoplasmic beta actin [Homo sapiens] >gi PI D 1021082 (AB004047) beta-actin [Homo sapiens] >gi 28252 beta-act	gi 2182269	1	1239	100	100	HWLQQ65	Lung, Pancreas, Colon
595	846016	(AB005894) ecallectin [Homo sapiens]. >sp O75028 O75028 ECALLECTIN. Length = 323	gn PI D 1032501	47	337	97	97	HDPIT90	Lung, Pancreas
596	846040	0-44 protein [Rattus sp.] >pir 57612 57612 Rat brain 0-44 mRNA, segment 2 - rat >sp P38718 P044_RAT 0-44 PROTEIN. Length = 127	gi 203072	127	585	84	88	HLICQ57	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
597	846073	protein p68 (AA 1-614) [Homo sapiens] >gi 35220 p68 protein (AA 1-614) [Homo sapiens] >gi 259360 (AF015812) RNA helicase p68 [Homo sapiens] >pir JC1087 JC1087 RNA helicase, ATP- dependent - human >sp P17844 DDX5_HUMAN PROBABLE RNA-DEPENDENT HELICASE P68 (	gi 38318	23	1051	91	92	HCWDW01	Lung, Pancreas
598	846257			286	651			HPWDE09	Lung, Prostate
599	HTXPN06R			65	286			HTXPN06	Lung, Breast/Ovarian
600	I12LAQ12R			3	311	71	79	I12LAQ12	Pancreas, Colon
601	HWAFU16R	(AB000911) ribosomal protein [Sus scrofa] >gn PI D 1339008 (AL031228) d 1033B10.4 (40S ribosomal protein S18 (RPS18, KE-3)) [Homo sapiens] >gi 198580 ribosomal protein [Mus musculus] >gi 433447 ribosomal protein S18 [Rattus rattus] >gi 3811382 (AF100956)	gn PI D 1019961	3	320	86	86	HWAFU16	Lung, Pancreas, Colon, Breast/Ovarian

602	HAEAM91R	(AB005218) L subunit of photosynthetic reaction center complex [Acidiphilium rubrum] >gnl P D d1026488 (AB005219) L subunit of photosynthetic reaction center complex [Acidiphilium angustum] >sp O70105 O701051 SUBUNIT OF PHOTOSYNTHETIC REACTION CENTER COM	gnl P D d1026481	174	215	66	66	66	HAEAM91	Pancreas, Colon, Breast/Ovarian
603	HOEMT44R	(AB010959) natural killer cell enhancing factor [Cyprinus carpio] Length = 199	gnl P D d1033048	54	431	84	93	93	HOEMT44	Lung, Colon, Breast/Ovarian
604	HE2OW04R	(AF001631) glucose-regulated protein GRP94 [Oryctolagus cuniculus] >sp O18750 ENPL_RABIT ENDOPLASMIN (94 KID GLUCOSE-REGULATED PROTEIN) (GRP94) (FRAGMENT). Length = 716	gil2581793	7	297	87	89	89	HE2OW04	Lung, Colon
605	HEFCG25R	(AF012422) ribosomal protein 46 [Drosophila melanogaster] Length = 51	gil2307014	3	143	65	87	87	HEFCG25	Lung, Colon, Breast/Ovarian
606	HAPQP94R	(AF018432) dUTPase [Homo sapiens] >gil144332 deoxyuridine nucleotidohydrolase [Homo sapiens] >gil1421818 deoxyuridine triphosphatase [Homo sapiens] >pir G02777 G02777 dUTP pyrophosphatase (EC 3.6.1.23) - human >gil292877 dUTP nucleotidohydrolase [Homo sa	gil2443581	3	320	97	97	97	HAPQP94	Lung, Pancreas, Colon
607	H2CBI37R	(AF042107) ribosomal protein S3a [Eimeria tenella] >gil2792508 (AF042107) ribosomal protein S3a [Eimeria tenella] Length = 264	gil2792508	3	182	64	64	64	H2CBI37	Colon, Breast/Ovarian
608	HEOPQ13R	(AF042505) cytochrome b [Homo sapiens] >sp G337377 G337377 CYTOCHROME B (FRAGMENT). Length = 380	gil337377	82	216	80	82	82	HEOPQ13	Lung, Colon

609	HCRNC25R	(AF051894) 15 kDa selenoprotein [Homo sapiens] Length = 161	gij3095111	61	162	100	100	100	HCRNC25	Lung, Pancreas, Colon
610	HFTTF28R	(AF056218) superficial zinc protein [Bos taurus] >sp Q77765 Q77765 SUPERFICIAL ZONE PROTEIN (FRAGMENT). Length = 401	gij3676501	3	185	73	80	80	HFTTF28	Pancreas, Colon
611	H2LAY26R			24	155				H2LAY26	Pancreas, Colon
612	HAPQA06R	40-kDa keratin protein [Homo sapiens] >pir A31370 KRHU9 keratin 19, type I, cytoskeletal - human Length = 400	gij386803	2	355	62	62	62	HAPQA06	Lung, Pancreas, Colon, Breast/Ovarian
613	HAQBM72R	40-kDa keratin protein [Homo sapiens] >pir A31370 KRHU9 keratin 19, type I, cytoskeletal - human Length = 400	gij386803	2	145	81	81	81	HAQBM72	Pancreas, Colon
614	H1BGOK18R	40-kDa keratin protein [Homo sapiens] >pir A31370 KRHU9 keratin 19, type I, cytoskeletal - human Length = 400	gij386803	1	429	91	92	92	H1BGOK18	Lung, Pancreas, Colon, Breast/Ovarian
615	H2MAC07R	acidic ribosomal phosphoprotein (P1) [Homo sapiens] >pir B27125 R6HUP1 acidic ribosomal protein P1 - human Length = 114	gij190234	111	438	100	100	100	H2MAC07	Lung, Colon, Breast/Ovarian
616	H1TWKF26R	acidic ribosomal phosphoprotein (P2) [Homo sapiens] >pir C27125 R6HUP2 acidic ribosomal protein P2 - human Length = 115	gij190236	1	345	95	96	96	H1TWKF26	Lung, Pancreas, Breast/Ovarian
617	H1TAHR89R	ADP,ATP carrier protein T2 - human >sp P12236 ADT3_HUMAN ADP,ATP CARRIER PROTEIN, LIVER ISOFORM T2 (ADP/ATP TRANSLOCASE 3) (ADENINE NUCLEOTIDE TRANSLOCATOR 3) (ANT 3). Length = 298	pir S03894 S03894	13	408	96	96	96	H1TAHR89	Lung, Pancreas

618	HOACE24R	alcohol dehydrogenase [Homo sapiens] >pir A337 IDEHUE1 aldehyde dehydrogenase (NAD+) (EC 1.2.1.3) 1, cytosolic - human >sp P00352 DHAC_HUMAN ALDEHYDE DEHYDROGENASE; CYTOSOLIC (EC 1.2.1.3) (CLASS 1) (ALHDII) (ALDH-E1). {SUB 2-501; Length = 501	gij178372	3	374	91	92	HOACE24	Pancreas, Colon
619	HOELC27R	aldolase A (EC 4.1.3.13) [Homo sapiens] >gij28597 aldolase A (AA 1-364) [Homo sapiens] >pir S14084 ADHUA fructose-bisphosphate aldolase (EC 4.1.2.13) A - human >sp P04075 ALFA_HUMAN FRUCTOSE- BISPHOSPHATE ALDOLASE A (EC 4.1.2.13) (MUSCLE-TYPE ALDOLASE). {S	gij178351	68	604	100	100	HOELC27	Lung, Pancreas, Breast/Ovarian
620	HWLBS25R	aldolase A [Gallus gallus] >gij409193 aldolase A [Gallus gallus] >bbs 167536 aldolase C=(fructose- 1,6-bisphosphate aldolase (EC 4.1.2.13) [chickens; brain, Peptide Partial, 42 aa] [Gallus gallus] >pir S1291 S1291 aldolase C - chicken (fragment) Length = 4	gij409191	3	95	90	93	HWLBS25	Lung, Pancreas, Colon, Breast/Ovarian
621	HWLVW62R	alpha-1 type III collagen [Homo sapiens] Length = 345	gij180414	1	213	97	97	HWLVW62	Lung, Colon, Breast/Ovarian
622	HAISE08R	ALPHA-1-ANTICHYMOTRYPSIN PRECURSOR (ACT). >gij4165890 (AF089747) alpha-1- antichymotrypsin precursor [Homo sapiens] {SUB 17-423} >gij177933 alpha-1-antichymotrypsin precursor [Homo sapiens] {SUB 22-423} >gij28332 alpha 1 antichymotrypsin [Homo sapiens] {SU	sp P01011 AACT_H UMAN	3	233	95	97	HAISE08	Lung, Pancreas

623	HFKHD94R	alpha-2 chain precursor (AA -25 to 1018) (3416 is 2nd base in codon) [Homo sapiens] Length = 1043	gi 30076	2	316	97	97	HFKHD94	Pancreas, Breast/Ovarian
624	HCE2M86R	alpha-adaptin (A) (AA 1-977) [Mus musculus] >pir A30111 A30111 alpha-adaptin A - mouse >sp P17426 ADAA_MOUSE ALPHA-ADAPTIN A (CLATHRIN ASSEMBLY PROTEIN COMPLEX 2 ALPHA-A LARGE CHAIN) (100 KD COATED VESICLE PROTEIN A) (PLASMA MEMBRANE ADAPTOR HA2/AP2 ADAP)	gi 49878	58	165	75	80	HCE2M86	Lung, Colon, Breast/Ovarian
625	IIOTQAA89R	annexin IV (placental anticoagulant protein II) [Homo sapiens] >gnl P1D1011889 annexin IV (carbohydrate-binding protein p33/41) [Homo sapiens] >pir A42077 A42077 annexin-IV - human >sp P09525 ANX4_HUMAN ANNEXIN IV (LIPOCORTIN IV) (ENDONEXIN I) (CHROMOB	gi 178699	154	399	94	94	IIOTQAA89	Pancreas, Colon, Breast/Ovarian
626	HBW69R	beta-1,2-N-acetylglucosaminyltransferase II [Homo sapiens] >pir S66256 S66256 alpha-1,6-mannosylglycoprotein beta-1, 2-N-acetylglucosaminyltransferase (EC 2.4.1.143) - human >sp Q10469 GNT2_HUMAN ALPHA-1,6-MANNOSYL-GLYCOPROTEIN BETA-1,2-N-ACETYLGLUCOSAM	gi 902745	60	308	88	90	HBW69R	Pancreas, Colon
627	HLQGB43R	beta-2-microglobulin [Homo sapiens] Length = 119	gi 179318	1	78	100	100	HLQGB43	Lung, Pancreas, Colon
628	HCR058R			3	506			HCR058	Pancreas, Colon
629	HS2IF12R			83	475			HS2IF12	Pancreas, Colon
630	HWLWA01R			2	538			HWLWA01	Pancreas, Colon

631	HCHMV24R		12	185		HCHMV24	Pancreas, Colon Breast/Ovarian		
632	HCHPT49R		94	303		HCHPT49	Colon, Breast/Ovarian		
633	HCRMGI2R		2	187		HCRMGI2	Pancreas, Colon		
634	HWLWE68R		2	241		HWLWE68	Pancreas, Colon		
635	HCHPF59R		24	179		HCHPF59	Pancreas, Breast/Ovarian		
636	HS2IA81R		90	551		HS2IA81	Pancreas, Colon		
637	HCRCNC17R		11	400		HCRCNC17	Pancreas, Colon		
638	HISDJ39R		14	406		HISDJ39	Pancreas, Colon		
639	HWLEL43R		2	337		HWLEL43	Pancreas, Colon		
640	HASCG71R		91	249		HASCG71	Lung, Colon, Breast/Ovarian		
641	HOEMO43R		2	184		HOEMO43	Lung, Pancreas, Colon, Breast/Ovarian		
642	HIRDFT95R	c-erb-B-2 precursor [Homo sapiens] >pirfA24571(A24571) protein-tyrosine kinase (EC 2.7.1.112) erbB2 precursor - human >sp P04626 ERBB2_HUMAN ERBB-2 RECEPTOR PROTEIN-TYROSINE KINASE PRECURSOR (EC 2.7.1.112) (P185ERBB2) (NEU PROTO- ONCOGENE) (C-ERBB-2). Length	gil31198	151	231	76	82	HIRDFT95	Pancreas, Colon
643	HAGEP27R	C10 protein [Bos taurus] >pirfA38464(A38464) 33K laminin receptor homolog - bovine Length = 295	gil63303	3	137	86	86	HAGEP27	Lung, Pancreas, Colon, Breast/Ovarian

644	HSYDG18R	calmodulin [Homo sapiens] >sp Q13942 Q13942 CALMODULIN: >pir A56785 A56785 calmodulin - pig (fragment) {SUB 80-130} >gil3243222 (AF069912) calmodulin [Xiphias gladius] {SUB 80-114} >pir E44101 E44101 calmodulin, vasoactive intestinal peptide-binding prote	gil825635	3	422	100	100	100	HSYDG18	Lung, Pancreas, Colon
645	HLJDZ15R	cathepsin C [Homo sapiens] >gil1947071 prepro dipeptidyl peptidase I [Homo sapiens] >pir S66504 S66504 dipeptidyl-peptidase I (EC 3.4.14.1) precursor - human >sp P53634 CATC_HUMAN DIPEPTIDYL-PEPTIDASE I PRECURSOR (EC 3.4.14.1) (DPP-I) (CATHEPSIN C) (CATHE	gil1006657	3	110	71	77		HLJDZ15	Lung, Colon
646	HAHDQ54R	cathepsin D [Homo sapiens] >gil29678 precursor polypeptide (AA -20 to 392) [Homo sapiens] >gil181180 preprocathepsin D [Homo sapiens] >pir A25771 KHHUD cathepsin D (EC 3.4.23.5) precursor - human >sp P07339 CATD_HUMAN CATHEPSIN D PRECURSOR (EC 3.4.23.5).	gil179948	2	103	100	100		HAHDQ54	Lung, Pancreas
647	HTLHI18R	collagen alpha 2(VI) chain precursor, long splice form - human >gil179711 alpha-2 collagen type VI-a' [Homo sapiens] {SUB 590-1018} >gil291918 alpha-2 type VI collagen [Homo sapiens] {SUB 315-358} Length = 1018	pir S05378 CGHU2A	2	481	89	89		HTLHI18	Lung, Pancreas



648	HACAC47R	complement component C3 [Homo sapiens] >pir/A94065 C3HU complement C3 precursor - human >sp P01024 C03_HUMAN COMPLEMENT C3 PRECURSOR [CONTAINS: C3A ANAPHYLATOXIN]. >gil181130 complement component C3 [Homo sapiens] {SUB 1-24} Length = 1663	gil179665	1	315	79	80	HACAC47	Lung, Pancreas, Breast/Ovarian
649	HLQFY41R	complement component C3 [Homo sapiens] >pir/A94065 C3HU complement C3 precursor - human >sp P01024 C03_HUMAN COMPLEMENT C3 PRECURSOR [CONTAINS: C3A ANAPHYLATOXIN]. >gil181130 complement component C3 [Homo sapiens] {SUB 1-24} Length = 1663	gil179665	3	377	96	98	HLQFY41	Lung, Pancreas, Colon, Breast/Ovarian
650	HOFMO83R	cyclin G [Homo sapiens] >gil123623 cyclin G1 [Homo sapiens] >gil1236913 cyclin G1 [Homo sapiens] >pir G02401 G02401 cyclin G1 - human >sp P51959 CG2G_HUMAN G2/MITOTIC-SPECIFIC CYCLIN G1. >gnl PID1013694 cyclin G [Homo sapiens] {SUB 1-279} >gil1486361 c	gnl PID1012016	2	205	87	93	HOFMO83	Pancreas, Breast/Ovarian
651	HLTDR22R	cytochrome b5, hepatic - brown howler monkey (fragment) Length = 87	pir S07959 S07959	136	357	100	100	HLTDR22	Pancreas, Colon, Breast/Ovarian
652	HPJCZ01R	cytochrome c oxidase II [Macaca fascicularis] >pir A27420 A27420 cytochrome-c oxidase (EC 1.9.3.1) chain II - crab-eating macaque mitochondrion (SGC1) >sp P11948 COX2_MACFA CYTOCHROME C OXIDASE POLYPEPTIDE II (EC 1.9.3.1). Length = 227	gil342255	2	163	44	50	HPJCZ01	Lung, Pancreas, Colon

653	HOEKC39R	cytochrome oxidase I [Homo sapiens] >gil506829 cytochrome oxidase subunit I [Homo sapiens] >pir A00463 ODHU1 cytochrome-c oxidase (EC 1.9.3.1) chain I - human mitochondrion (SGC1) >sp P00395 COX1_HUMAN CYTOCHROME C OXIDASE POLYPEPTIDE I (EC 1.9.3.1). Leng	gil53006	54	167	91	95	HOEKC39	Lung, Pancreas, Colon
654	HOELI24R	cytochrome oxidase subunit 3 [Homo sapiens] Length = 260	gil2052365	29	166	97	97	HOELI24	Lung, Pancreas, Colon
655	HODEI18R	cytochrome oxidase subunit II [Homo sapiens] >gil530071 cytochrome oxidase subunit II [Homo sapiens] >gil530073 cytochrome oxidase subunit II [Homo sapiens] >gil530077 cytochrome oxidase subunit II [Homo sapiens] >gil337187 cytochrome oxidase subunit II	gil530069	1	180	69	72	HODEI18	Lung, Pancreas, Colon
656	HOSNR06R	cytochrome oxidase subunit II [Homo sapiens] >gil530071 cytochrome oxidase subunit II [Homo sapiens] >gil530073 cytochrome oxidase subunit II [Homo sapiens] >gil530077 cytochrome oxidase subunit II [Homo sapiens] >gil337187 cytochrome oxidase subunit II	gil530069	269	403	93	95	HOSNR06	Lung, Pancreas
657	HCQDL20R	cytochrome P450 PCN3 [Homo sapiens] >pir A34101 A34101 cytochrome P450 3A5 - human >sp P20815 CP35_HUMAN CYTOCHROME P450 3A5 (EC 1.14.14.1) (CYP11A5) (P450-PCN3). >gil950342 cytochrome P450 [Homo sapiens] (SUB 1-24) Length = 502	gil181346	39	245	98	98	HCQDL20	Pancreas, Colon

658	HTOHI64R	cytokeratin 15 (AA 1 - 456) [Homo sapiens] >pir S01069 KRHS5 keratin 15, type I, cytoskeletal - human >sp P19012 K1CO_HUMAN KERATIN, TYPE I CYTOSKELETAL 15 (CYTOKERATIN 15) (K15) (CK 15). Length = 456	gil34071	149	253	89	89	HTOHI64	Prostate, Breast/Ovarian
659	HCHBR11R	cytokeratin 8 [Homo sapiens] Length = 483	gil181400	3	380	55	57	HCHBR11	Lung, Pancreas, Colon, Breast/Ovarian
660	HADBE77R	cytoplasmic chaperonin hTRiC5 [Homo sapiens] Length = 201	gil609308	43	294	80	84	HADBE77	Lung, Pancreas, Colon, Breast/Ovarian
661	HFKHD49R	D-beta-hydroxybutyrate dehydrogenase [Rattus norvegicus] Length = 93	gil930260	1	210	100	100	HFKHD49	Lung, Colon, Breast/Ovarian
662	HOEMI59R	decorin [Homo sapiens] >gil609452 decorin [Homo sapiens] (SUB 1-70). Length = 347	gil181519	3	128	72	75	HOEMI59	Lung, Colon
663	HTYNC43R	elongation factor 1-alpha 1 [Homo sapiens] >gil927067 elongation factor 1-alpha 1 [Homo sapiens] >pir 59399 59399 oncogene PTF-1 - human >sp Q16577 Q16577 ONCOGENE. Length = 398	gil927065	2	217	92	94	HTYNC43	Lung, Pancreas, Colon
664	H6EAQ15R	elongation factor 2 [Homo sapiens] >gil31108 human elongation factor 2 [Homo sapiens] >pir S18294 EFHU2 translation elongation factor eEF-2 - human >sp P13639 EF2_HUMAN ELONGATION FACTOR 2 (EF-2) >gil181969 elongation factor 2 [Homo sapiens] (SUB 501-858	gil31106	2	70	100	100	H6EAQ15	Lung, Pancreas, Breast/Ovarian

665	HCF1M34R	elongation factor Tu [Mus musculus] >sp Q61511 Q61511_EUKARYOTIC TRANSLATION ELONGATION FACTOR 1 ALPHA 1 (EEF-TU GENE ENCODING ELONGATION FACTOR TU, 5' END) (PIKAGMI:NT). Length = 108	gi 553907	48	308	94	95	HCF1M34	Lung, Breast/Ovarian
666	HTTID16R	ENA-78 prepeptide [Homo sapiens] >gi 607031 neutrophil-activating peptide 78 [Homo sapiens] >gi 471243 ENA-78 gene product [Homo sapiens] >pir C2433 A55010 neutrophil-activating peptide ENA-78 - human >sp P42830 EN78_HUMAN NEUTROPHIL ACTIVATING PROTEIN E	gi 684922	2	331	85	85	HTTID16	Pancreas, Colon
667	HDP1A145R	endoglin [Homo sapiens] >pir S37628 S37628 endoglin - human Length = 625	gi 402207	2	181	65	65	HDP1A145	Pancreas, Colon
668	HK1XL19R	epoxide hydrolase [Homo sapiens] >gi 340390 epoxide hydrolase [Homo sapiens] >gi 34343 epoxide hydrolase (AA 1-455) [Homo sapiens] >gi 438701 epoxide hydrolase [Homo sapiens] >pir A29939 A29939 epoxide hydrolase (EC 3.3.2.3) 1, microsomal - human >sp P070	gi 450271	1	348	100	100	HK1XL19	Lung, Pancreas, Colon
669	H2LAY52R	EWS gene product [Mus musculus] >pir A55726 A55726 RNA-binding protein Ews - mouse >sp Q61545 EWS_MOUSE RNA-BINDING PROTEIN EWS. Length = 655	gi 488513	27	494	100	100	H2LAY52	Lung, Pancreas, Colon, Breast/Ovarian
670	HAIJB09R	FAST kinase [Homo sapiens] >pir J37386 J37386 FAST kinase - human >sp Q14296 Q14296_FAST KINASE. Length = 549	gi 1006659	19	324	77	77	HAIJB09	Pancreas, Colon

671	HAPN186R	G9a [Homo sapiens] >pir S30385 S30385 G9a protein - human >sp Q14349 Q14349 G9A PROTEIN CONTAINING ANKYRIN-LIKE REPEATS. Length = 1001	3	419	97	97	HAPN186	Lung, Colon
672	HCEVB92R	glutamate dehydrogenase [Homo sapiens] >sp Q14400 Q14400 GLUTAMATE DEHYDROGENASE (FRAGMENT). Length = 258	2	217	78	81	HCEVB92	Pancreas, Colon
673	HAPRJ22R	glutamate--ammonia ligase [Homo sapiens] >pir S18455 AJHUQ glutamate--ammonia ligase (EC 6.3.1.2) - human Length = 373	168	431	100	100	HAPRJ22	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
674	HCRMZ32R	glutamine:fructose-6-phosphate amidotransferase [Homo sapiens] >pir A45055 A45055 glutamine--fructose-6-phosphate transaminase (isomerizing) (EC 2.6.1.16) - human >sp Q06210 GFAT_HUMAN GLUCOSAMINE--FRUCTOSE-6-PHOSPHATE AMINOTRANSFERASE [ISOMERIZING] (EC 2	2	316	91	91	HCRMZ32	Pancreas, Colon, Breast/Ovarian
675	HIBMVM42R	guanine nucleotide regulatory protein [Homo sapiens] >gil3041860 (AC004534) guanine nucleotide regulatory protein [Homo sapiens] >pir I38402 I38402 guanine nucleotide regulatory protein - human >sp Q12774 Q12774 GUANINE NUCLEOTIDE REGULATORY PROTEIN. Leng	1	363	84	87	HIBMVM42	Colon, Breast/Ovarian

676	HAIXGE45R	guanine nucleotide-binding protein G-s-alpha-4 [Homo sapiens] >gi 31913 alpha-S1 (AA 1-380) [Homo sapiens] >pir C31927 RGHUA1 GTP-binding regulatory protein Gs alpha chain (adenylate cyclase-stimulating), splice form 4 - human Length = 380	gi 386746	2	439	96	96	IIADGE45	Lung, Pancreas, Colon
677	HTXPNI1R	heat shock-induced protein [Homo sapiens] >pir B4587 B4587.1 dnaK-type molecular chaperone HSP70-Hom - human >sp P34931 HS7H_HUMAN HEAT SHOCK 70 KD PROTEIN 1-HOM (HSP70-HOM). Length = 641	gi 188492	3	413	94	98	HTXPNI1	Lung, Pancreas, Colon
678	HCDBN37R	heterogeneous nuclear ribonucleoprotein C-like protein - human Length = 328	pir A44192 A44192	1	300	96	96	HCDBN37	Colon, Breast/Ovarian
679	HAIBGC02R	HLA-DR-beta-B [Homo sapiens] Length = 266	gi 490048	3	389	89	94	HAIBGC02	Lung, Colon
680	HNTSA70R	HsMcm6 [Homo sapiens] >sp Q14566 MCM6_HUMAN DNA REPLICATION LICENSING FACTOR MCM6 (1'105MCM). Length = 821	gn P D d 013380	3	341	69	72	HNTSA70	Lung, Colon
681	HDTKP24R	hypothetical 18K protein (rRNA) - goldfish mitochondrion (SGC1) Length = 166	pir JC1348 JC1348	397	492	64	67	HDTKP24	Lung, Pancreas, Colon
682	HODE114R	hypothetical 18K protein (rRNA) - goldfish mitochondrion (SGC1) Length = 166	pir JC1348 JC1348	164	247	62	68	HODE114	Lung, Pancreas, Colon
683	HOELC42R	IGF-BP 4 [Homo sapiens] >gn P D c 1227579 insulin-like growth factor binding protein 4 [Homo sapiens] >pir B37252 B37252 insulin-like growth factor-binding protein 4 precursor - human >sp P22692 BP4_HUMAN INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN 4 PREC	gi 184816	13	288	83	83	HOELC42	Pancreas, Colon

684	HWAF144R	immunoglobulin heavy chain [Homo sapiens] >pir D36005 D36005 Ig heavy chain V region (M43) - human (SUB 38-156) Length = 156	gil567121	2	463	83	90	HWAF144	Lung, Colon
685	H1ABGF46R	immunoglobulin light chain variable region [Homo sapiens] >gil2970534 (AF049692) immunoglobulin kappa light chain [Homo sapiens] (SUB 3-106) Length = 143	gil1136555	42	446	71	85	H1ABGF46	Lung, Pancreas, Colon, Breast/Ovarian
686	HOELC15R	insulin-like growth factor-binding protein [Homo sapiens] >gil386791 growth factor-binding protein-3 [Homo sapiens] >gil398164 insulin-like growth factor binding protein 3 [Homo sapiens] >pir A36578 IOH03 insulin-like growth factor-binding protein 3 precur	gil183116	8	424	96	96	HOELC15	Pancreas, Colon, Breast/Ovarian
687	H2LAR26R	keratin 18 [Homo sapiens] >gil307081 keratin 18 precursor [Homo sapiens] >gil34037 cyokeratin 18 [Homo sapiens] >pir S05481 S05481 keratin 18, type I, cytoskeletal - human >sp P05783 K1CR_HUMAN KERATIN, TYPE I CYTOSKELETAL 18 (CYTOKERATIN 18) (K18) (CK 1	gil386844	72	476	97	98	H2LAR26	Colon, Breast/Ovarian
688	H2LAV85R	Ku (p70/p80) subunit [Homo sapiens] >gil307093 Ku antigen [Homo sapiens] >pir A35051 A32626 Ku antigen 80K chain - human >sp P13010 KU86_HUMAN ATP-DEPENDENT DNA HELICASE II, 86 KD SUBUNIT (LUPUS KU AUTOANTIGEN PROTEIN P86) (86 KD SUBUNIT OF KU ANTIGEN) (T	gil307094	67	462	97	98	H2LAV85	Lung, Pancreas
689	HBSDC92R	I-caldesmon II [Homo sapiens] Length = 532	gnl P1D d1015132	56	337	64	76	HBSDC92	Lung, Breast/Ovarian

690	HUTHN01R	L6 [Homo sapiens] >pir A42926 A42926 L6 surface protein - human Length = 202	gij186804	87	545	91	91	HUTHN01	Lung, Pancreas, Colon, Breast/Ovarian
691	H2LAW03R	lactate dehydrogenase B [Homo sapiens] >gij34329 lactate dehydrogenase B (AA 1 - 334) [Homo sapiens] >pir S02795 DEHULH L-lactate dehydrogenase (EC 1.1.1.27) chain H - human >sp P07195 LDHH_HUMAN L-LACTATE DEHYDROGENASE H CHAIN (EC 1.1.1.27) (LDH-H); (SUB	gij P D e22324	111	536	99	100	H2LAW03	Lung, Pancreas
692	HOEMO60R	lactate dehydrogenase-A [Homo sapiens] >gij34313 lactate dehydrogenase-A [Homo sapiens] >pir A00347 DEHULM L-lactate dehydrogenase (EC 1.1.1.27) chain M - human >sp P00338 LDHM_HUMAN L-LACTATE DEHYDROGENASE M CHAIN (EC 1.1.1.27) (LDH-A); (SUB 2-332) Lengi	gij780261	1	201	59	59	HOEMO60	Pancreas, Breast/Ovarian
693	HKAHJ14R	latent transforming growth factor-beta-binding protein - human Length = 1820	pir A55494 A55494	1	216			HKAHJ14	Pancreas, Colon
694	HOHEA39R	lumican [Homo sapiens] Length = 338		1	240	85	86	HOHEA39	Pancreas, Breast/Ovarian
695	HOELF72R	M130 antigen [Homo sapiens] >pir I38003 S36077	gij699577	58	468	97	97	HOELF72	Pancreas, Colon
696	HAPNX59R	M130 antigen - human >sp Q07898 Q07898 M130 ANTIGEN PRECURSOR. Length = 1116	gij312142	1	432	85	88	HAPNX59	Lung, Colon
697	HBJJS17R	methionine aminopeptidase [Homo sapiens] >gij687243 eIF-2-associated p67 homolog [Homo sapiens] >pir S52112 DPHUM2 methionyl aminopeptidase (EC 3.4.11.18) 2 - human >sp P50579 AMP2_HUMAN METHIONINE AMINOPEPTIDASE 2 (EC 3.4.11.18) (METAP 2) (PEPTIDASE M 2)	gij903982	1	255	100	100	HBJJS17	Lung, Pancreas



698	HAATDU61R	midkine [Homo sapiens] >gil188571 retinoic acid inducible factor [Homo sapiens] >gil35087 neurite outgrowth-promoting protein [Homo sapiens] >gnlP1D(d1001932 midkine [Homo sapiens] >pirJ110385J110385 midkine precursor - human >spP21741MK_HUMAN MIDKINE	gil182651	1	108	67	67	HAATDU61	Pancreas, Colon
699	HCWHT65R	mitochondrial intermediate peptidase precursor [Homo sapiens] >spQ99797Q99797 MITOCHONDRIAL INTERMEDIATE PEPTIDASE PRECURSOR (EC 3.4.24.59). Length = 713	gil1763642	1	432	74	77	HCWHT65	Prostate, Colon
700	H2CBN02R	mitochondrial matrix protein [Homo sapiens] >pirA32800A32800 chaperonin GroEL precursor - human >spP10809IP60_HUMAN MITOCHONDRIAL MATRIX PROTEIN P1 PRECURSOR (P60 LYMPHOCYTE PROTEIN) (60 KD CHAPERONIN) (HEAT SHOCK PROTEIN 60) (HSP-60) (PROTEIN CPN60) (	gil190127	1	435	99	99	H2CBN02	Pancreas, Colon
701	H2CBV68R	mitochondrial matrix protein [Homo sapiens] >pirA32800A32800 chaperonin GroEL precursor - human >spP10809IP60_HUMAN MITOCHONDRIAL MATRIX PROTEIN P1 PRECURSOR (P60 LYMPHOCYTE PROTEIN) (60 KD CHAPERONIN) (HEAT SHOCK PROTEIN 60) (HSP-60) (PROTEIN CPN60) (	gil190127	2	406	100	100	H2CBV68	Colon, Breast/Ovarian

702	H6EDK07R	Mr 110,000 antigen [Homo sapiens] >pir 52703 52703 42K membrane glycoprotein - human >sp Q16186 G100_HUMAN 110 KD CELL MEMBRANE GLYCOPROTEIN. Length = 407	gn P D d 011683	1	252	90	90	H6EDK07	Lung, Breast/Ovarian
703	HACAH10R	NADH dehydrogenase subunit 2, ND2 [human, brain, Peptide Mitochondrial Partial Mutant, 67 aa] [Homo sapiens] >sp Q36734 Q36734 NADH DEHYDROGENASE SUBUNIT 2 (FRAGMENT). Length = 67	bbs 75898	1	66	89	96	HACAH10	Lung, Pancreas, Colon
704	HCCMC56R	NADH-UBIQUINONE OXIDOREDUCTASE B18 SUBUNIT (EC 1.6.5.3) (EC 1.6.99.3) (COMPLEX I-B18) (CI-B18) (CELL ADHESION PROTEIN SQM1). Length = 134	sp P17568 NB8M_HUMAN	16	351	83	83	HCCMC56	Lung, Colon, Breast/Ovarian
705	H2CBN54R	NADH-ubiquinone oxidoreductase B22 subunit {C-terminal}; [human, placenta, Peptide Mitochondrial Partial, 179 aa] [Homo sapiens] Length = 179	bbs 77894	2	427	99	99	H2CBN54	Pancreas, Colon
706	HMCGL12R	NMB gene product [Homo sapiens] >pir 38065 38065 gene NMB protein - human >sp Q14956 NMB_HUMAN PUTATIVE TRANSMEMBRANE PROTEIN NMB PRECURSOR. Length = 560	gil666043	96	389	76	80	HMCGL12	Lung, Pancreas
707	HWHPX50R	nucleolar protein [Mus musculus] >pir 52858 52858 nucleolar protein - mouse >sp Q61937 NPM_MOUSE NUCLEOPHOSMIN (NPM) (NUCLEOLAR PHOSPHOPROTEIN B23) (NUMATRIN) (NUCLEOLAR PROTEIN NO38). Length = 292	gil200011	1	414	87	87	HWHPX50	Lung, Pancreas, Colon, Breast/Ovarian

708	HAPQD84R		115	267		HAPQD84	Lung, Pancreas, Colon, Breast/Ovarian
709	HLIBN66R		1	219		HLIBN66	Lung, Pancreas
710	HE2BD84R	OSF-2p1 [Homo sapiens] >pirS36111 S36111  osteoblast-specific factor 2 - human >sp Q15064 Q15064 OSF-2p1. Length = 779	2	394	77	HE2BD84	Pancreas, Colon, Breast/Ovarian
711	HLQFY45R	pancreatitis-associated protein [Homo sapiens] >gil312807 preprotein [Homo sapiens] >bbs121222 PAP-H=pancreatitis-associated protein [human, pancreas, Peptide, 175 aa] [Homo sapiens] >gnl PID d1003233 PAP homologous protein [Homo sapiens] >pirA49616 A49	57	374	60	HLQFY45	Pancreas, Colon
712	HAMGQ78R	phosphate carrier isoform A (alternatively spliced, exon IIIA) - human >sp Q00325 MPCP_HUMAN MITOCHONDRIAL PHOSPHATE CARRIER PROTEIN PRECURSOR. Length = 362	2	352	82	HAMGQ78	Lung, Colon
713	HODEV64R	poly(A)-binding protein [Homo sapiens] >gil1562511 poly(A)-binding protein [Homo sapiens] >sp P11940 PAB1_HUMAN POLYADENYLATE-BINDING PROTEIN 1 (POLY(A) BINDING PROTEIN 1) (PABP 1). Length = 636	1	492	97	HODEV64	Lung, Pancreas

714	H2CBD48R	precursor polypeptide (AA -21 to 782) [Homo sapiens] >pir A35954 A35954 endoplasmin precursor - human >sp P14625 ENPL_HUMAN ENDOPLASMIN PRECURSOR (94 KD GLUCOSE-REGULATED PROTEIN) (GRP94) (GP96 HOMOLOG) (TUMOR REJECTION ANTIGEN 1). Length = 803	gij37261	2	499	95	97	H2CBD48	Pancreas, Colon
715	HCCMA82R	procarboxypeptidase B [Homo sapiens] >pir A42332 A42332 carboxypeptidase B (EC 3.4.17.2) precursor, pancreatic - human Length = 416	gij189625	3	383	94	94	HCCMA82	Pancreas, Colon
716	HCEMK78R	prostaglandin-stimulating factor, PG12-stimulating factor, PSF [human, cultured diploid fibroblast cells. Peptide, 282 aa] [Homo sapiens] >pir S5003 S5003 prostacyclin-stimulating factor - human >sp Q16270 Q16270 PROSTACYCLIN-STIMULATING FACTOR. Length =	hbsj161346	3	329	95	95	HCEMK78	Lung, Pancreas
717	H2CBD13R	proteasome subunit C9 [Homo sapiens] >pir S15972 SNHUC9 multicatalytic endopeptidase complex (EC 3.4.99.46) chain C9 - human >sp P25789 PRC9_HUMAN PROTEASOME COMPONENT C9 (EC 3.4.99.46) (MACROPAIN SUBUNIT C9) (MULTICATALYTIC ENDOPEPTIDASE COMPLEX SUBUNIT	gnl P D d1001118	156	461	100	100	H2CBD13	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
718	HCFMU61R	protein-tyrosine kinase (EC 2.7.1.112) ZAP-70 - human Length = 619	pir A44266 A44266	1	477	98	98	HCFMU61	Pancreas, Colon

719	HOSENE94R	proteoglycan core protein [Homo sapiens] >pirA45016 NBHUC8 decorin precursor - human >sp P07585 PGS2_HUMAN BONE PROTEOGLYCAN II PRECURSOR (PG-S2) (DECORIN) (PG40). >gil161226 decorin [Rattus norvegicus] {SUB 204-299} Length = 359	gil181170	2	466	85	85	HOSENE94	Lung, Pancreas
720	HCROZ08R	putative precursor (AA 1-304) [Homo sapiens] >gnl PID e224276 uracil-DNA-glycosylase, UNG1 [Homo sapiens] >pir S05964 A60472 uracil-DNA glycosylase (EC 3.-.-.-) precursor - human >gnl PID e1296296 MITOCHONDRIAL LOCALIZATION PEPTIDE [unidentified] {SUB 1-3	gil37599	3	218	100	100	HCROZ08	Lung, Pancreas, Colon
721	HIHBEI47R	pyruvate dehydrogenase E1-alpha precursor [Homo sapiens] >pir A60225 A60225 pyruvate dehydrogenase (lipoamide) (EC 1.2.4.1) alpha chain - bovine (fragment) {SUB 54-74} Length = 414	gil387011	1	330	88	88	HIHBEI47	Colon, Breast/Ovarian
722	HTXPI31R	pyruvate kinase M2 [Sus scrofa] >sp Q29582 Q29582 PYRUVATE KINASE M2 (EC 2.7.1.40) (PHOSPHOENOLPYRUVATE KINASE) (PHOSPHOENOL TRANSPHOSPHORYLASE) (FRAGMENT). Length = 108	gil972104	2	286	84	85	HTXPI31	Pancreas, Breast/Ovarian
723	HOEKC30R	rhoC coding region (AA 1-193) [Homo sapiens] >gil407699 GTPase [Homo sapiens] >pir S01029 TVHURC GTP-binding protein rhoC - human Length = 193	gil36034	2	151	94	94	HOEKC30	Lung, Pancreas, Breast/Ovarian
724	HOSNR67R	ribosomal protein small subunit [Homo sapiens] Length = 264	gil306553	1	483	97	98	HOSNR67	Lung, Pancreas

725	H2LAV92R	ribosomal protein L38 [Homo sapiens] >gil57078 ribosomal protein L38 [Rattus rattus] >pirS15658 R5RT38 ribosomal protein L38 - rat >pirS38385 S38385 ribosomal protein L38 - human >gnl P D 1026783 (A18007185) ribosomal protein L38 [Homo sapiens] {SUB 34-70}	gil407423	13	351	72	72	H2LAV92	Lung, Pancreas, Prostate, Colon, Breast/Ovarian
726	H2LAO74R	ribosomal protein L10 [Homo sapiens] >sp D1026771 D1026771 RIBOSOMAL PROTEIN L15 (FRAGMENT). {SUB 16-57} Length = 205	gil414587	359	502	83	83	H2LAO74	Lung, Pancreas, Colon, Breast/Ovarian
727	HKMMF83R	ribosomal protein L18a [Homo sapiens] >gil3702270 (AC005796) ribosomal protein L18a [Homo sapiens] >gnl P D 1029536 (AB007175) ribosomal protein L18a [Homo sapiens] {SUB 111- 176} Length = 176	gil401845	1	360	96	96	HKMMF85	Lung, Breast/Ovarian
728	HCLB227R	ribosomal protein L19 [Homo sapiens] >bbs127872 ribosomal protein L19 [human, breast cancer cell line, MCF-7. Peptide, 196 aa] [Homo sapiens] >gil206726 ribosomal protein L19 [Rattus norvegicus] >gnl P D e218038 ribosomal protein L19 [Rattus norvegicus]	gil36128	19	273	93	98	HCLB227	Lung, Pancreas, Colon
729	H2LAV11R	ribosomal protein L21 [Homo sapiens] >gil984143 ribosomal protein L21 [Homo sapiens] >pirS55913 S55913 ribosomal protein L21, cytosolic - human >sp D1026774 D1026774 RIBOSOMAL PROTEIN L21 (FRAGMENT). {SUB 124-154} Length = 160	gil550015	126	530	99	99	H2LAV11	Lung, Pancreas, Colon

730	H13AGP60R	ribosomal protein L27 [Homo sapiens] >gi 3115335 ribosomal protein L27 [Homo sapiens] >gi 57694 ribosomal protein L27 (AA 1 - 136) [Rattus norvegicus] >gi 62981 ribosomal protein L27 [Gallus gallus] >pir S00401 RSR.T27 ribosomal protein L27, cytosolic - ra	gi 388769	161	373	66	70	HBAGP60	Pancreas, Colon
731	HOEMJ56R	ribosomal protein L28 [Homo sapiens] >pir S55915 S55915 ribosomal protein L28 - human Length = 137	gi 550019	3	206	94	94	HOEMJ56	Lung, Colon, Breast/Ovarian
732	HA5AF77R	ribosomal protein L31 [Sus scrofa] >gi 36130 ribosomal protein L31 (AA 1-125) [Homo sapiens] >gi 57115 ribosomal protein L31 (AA 1-125) [Rattus norvegicus] >pir S05576 RS5HU31 ribosomal protein L31 - human >pir A26417 RSR.T31 ribosomal protein L31 - rat >gn	gn P1D1c276436	1	381	82	82	HA5AF77	Lung, Prostate, Colon, Breast/Ovarian
733	H2MAC95R	ribosomal protein L37 [Homo sapiens] >bbs 172744 ribosomal protein L37 (C2-C2 zinc-finger-like) [human, HeLa cells, Peptide, 97 aa] [Homo sapiens] >gn P1D1d1005426 ribosomal protein L37 [Homo sapiens] >gi 57121 ribosomal protein L37 [Rattus norvegicus] >	gi 292441	67	411	79	79	H2MAC95	Lung, Colon, Breast/Ovarian
734	HIDPLP40R	ribosomal protein L37 [Homo sapiens] >bbs 172744 ribosomal protein L37 (C2-C2 zinc-finger-like) [human, HeLa cells, Peptide, 97 aa] [Homo sapiens] >gn P1D1d1005426 ribosomal protein L37 [Homo sapiens] >gi 57121 ribosomal protein L37 [Rattus norvegicus] >	gi 292441	1	363	100	100	HIDPLP40	Lung, Pancreas, Breast/Ovarian

735	HOEMK92R	ribosomal protein L37a [Homo sapiens] >gil36134 ribosomal protein L37a [Homo sapiens] >gil57123 ribosomal protein L37a (AA 1 - 92) [Rattus rattus] >gil312414 ribosomal protein L37a [Mus musculus] >pir S05014 IR5RT37 ribosomal protein L37a - rat >pir S42109	gil292439	3	185	96	96	HOEMK92	Lung, Pancreas, Breast/Ovarian
736	HABAD57R	ribosomal protein L4 [Homo sapiens] >pir S39803 S39803 ribosomal protein L4 - human Length = 425	gil307385	210	431	80	90	HABAD57	Lung, Pancreas
737	HLXNA52R	ribosomal protein L4 [Rattus norvegicus] Length = 421	gnl PID e121603	3	296	86	86	HLXNA52	Lung, Pancreas
738	HWAFK82R	ribosomal protein L9 [Homo sapiens] >gnl PID f003911 human homologue of rat ribosomal protein L9 [Homo sapiens] Length = 192	gil710366	139	354	77	78	HWAFK82	Lung, Colon, Breast/Ovarian
739	H2CBL68R	ribosomal protein S13 [Homo sapiens] >gil488417 ribosomal protein S13 [Homo sapiens] >gnl PID d1014222 ribosomal protein S13 [Homo sapiens] >gil57730 ribosomal protein S13 [Rattus rattus] >pir S34109 S34109 ribosomal protein S13, cytosolic - human >pir A3	gil307391	3	461	100	100	H2CBL68	Lung, Pancreas
740	HNTNE17R	ribosomal protein S17 [Homo sapiens] >gil337503 S17 ribosomal protein [Homo sapiens] >pir JT0403 R4HU17 ribosomal protein S17, cytosolic - human Length = 135	gil337501	1	387	100	100	HNTNE17	Lung, Pancreas, Breast/Ovarian
741	HBJLR37R	ribosomal protein S26 [Homo sapiens] Length = 115	gil296452	2	328	98	100	HBJLR37	Pancreas, Colon, Breast/Ovarian



742	HOSNG20R	ribosomal protein S4X isoform [Homo sapiens] >gi 2791861 AF041428 ribosomal protein s4 X isoform [Homo sapiens] >gi 200864 ribosomal protein S4 [Mus musculus] >gi 57135 ribosomal protein S4 (AA 1 - 263) [Rattus rattus] >gnl P D d1002335 ribosomal protei	gi 337510	1	337	97	98	HOSNG20	Lung, Pancreas, Colon, Breast/Ovarian
743	HCLBZ30R	ribosomal protein S5 [Mus musculus] Length = 204	gi 1685071	2	244	89	89	HCLBZ30	Lung, Pancreas, Colon, Breast/Ovarian
744	HBCNY11R	ribosomal protein S8 [Homo sapiens] >gi 57139 ribosomal protein S8 (AA 1-208) [Rattus norvegicus] >gi 313298 ribosomal protein S8 [Mus musculus] >pir S01609 R3RT8 ribosomal protein S8 - rat >pir S42110 S42110 ribosomal protein S8 - mouse >pir S25022 S2502	gi 36150	2	334	100	100	HBCNY11	Lung, Pancreas, Breast/Ovarian
745	HOEKC80R	S19 ribosomal protein [Homo sapiens] >pir 52692 52692 ribosomal protein S19, cytosolic - human Length = 145	gi 337733	2	376	98	98	HOEKC80	Lung, Pancreas, Colon, Breast/Ovarian
746	HCHBM70R	secretory protein [Homo sapiens] >gi 940946 intestinal trefoil factor [Homo sapiens] >pir A48284 A48284 intestinal trefoil factor 3 precursor - human >sp Q07654 ITF_HUMAN INTESTINAL TREFOIL FACTOR PRECURSOR (HPI.B). Length = 80	gi 402483	1	114	57	57	HCHBM70	Colon, Breast/Ovarian
747	HPCES53R	semaphorin C [Mus musculus] >pir 48746 48746 semaphorin C - mouse (fragment) >sp Q62179 Q62179 SEMAPHORIN C (SEM C) (FRAGMENT). Length = 782	gi 854328	1	165	80	86	HPCES53	Colon, Breast/Ovarian

748	HCRQC92R	spermidine/spermine N1-acetyltransferase [Homo sapiens] >gil338336 spermidine/spermine N1-acetyltransferase [Homo sapiens] >spip216731ATDA_HUMAN DIAMINE ACETYLTRANSFERASE (EC 2.3.1.57) (SPERMIDINE/SPERMINE N1-ACETYLTRANSFERASE) (SSAT) (PUTRESCINE ACETYL.T	gil338392	3	278	98	98	HCRQC92	Lung, Colon, Breast/Ovarian
749	HAOAG73R	TARBP-b gene product [Homo sapiens] Length = 277	gil347964	2	418	100	100	HAOAG73	Lung, Colon
750	HWAPE36R	TIEGT gene product [Homo sapiens] >pirj138334 138334 TIEGT (testis enhanced gene transcript) - human Length = 237	gil458545	2	127	100	100	HWAPE36	Pancreas, Colon
751	HBGOU57R	TIMP gene product [Homo sapiens] >gil182483 prefibroblast collagenase inhibitor [Homo sapiens] >gil189382 collagenase inhibitor [Homo sapiens] >gil37183 precursor [Homo sapiens] >pirA93372 ZYHUEP metalloproteinase tissue inhibitor 1 precursor - human >gi	gil490094	60	314	75	75	HBGOU57	Lung, Pancreas, Breast/Ovarian
752	HTXIF20R	TIMP gene product [Homo sapiens] >gil182483 prefibroblast collagenase inhibitor [Homo sapiens] >gil189382 collagenase inhibitor [Homo sapiens] >gil37183 precursor [Homo sapiens] >pirA93372 ZYHUEP metalloproteinase tissue inhibitor 1 precursor - human >gi	gil490094	1	549	84	84	HTXIF20	Lung, Pancreas, Colon, Breast/Ovarian
753	HCRMD09R	transforming growth factor-beta 1 binding protein precursor [Homo sapiens] >pirA35626 A35626 transforming growth factor beta-1-binding protein - human Length = 1394	gil339548	2	460	86	87	HCRMD09	Lung, Pancreas, Colon

754	HAIJB47R	triose-phosphate isomerase [Pan troglodytes] >gi 37247 triosephosphate isomerase [Homo sapiens] >gi 1200507 triosephosphate isomerase [Homo sapiens] >gi 339841 triosephosphate isomerase (EC 5.3.1.1) [Homo sapiens] >pir S29743 SHUT triose-phosphate isomer	gij176960	2	334	100	100	HAIJB47	Lung, Pancreas, Breast/Ovarian
755	HABGB36R			6	251			HABGB36	Lung, Breast/Ovarian
756	HADBF86R			3	158			HADBF86	Lung, Colon
757	HADDP09R			2	97			HADDP09	Lung, Pancreas, Colon, Breast/Ovarian
758	HAGCY06R			2	58			HAGCY06	Pancreas, Breast/Ovarian
759	HAGDI75R			1	66			HAGDI75	Colon, Breast/Ovarian
760	HAIBD47R			118	429			HAIBD47	Lung, Pancreas
761	HAHCR61R			165	422			HAHCR61	Pancreas, Colon
762	HAJAU22R			101	202			HAJAU22	Pancreas, Colon
763	HAMGB62R			212	370			HAMGB62	Lung, Pancreas, Colon, Breast/Ovarian
764	HANGC52R			3	98			HANGC52	Lung, Pancreas, Colon
765	HAPCF30R			2	94			HAPCF30	Lung, Colon
766	HAPPV45R			216	536			HAPPV45	Lung, Pancreas
767	HAPQK19R			200	415			HAPQK19	Lung, Pancreas
768	HAPRL82R			3	233			HAPRL82	Lung, Pancreas
769	HAQBT45R			40	255			HAQBT45	Lung, Colon
770	HAUAL56R			127	315			HAUAL56	Pancreas, Breast/Ovarian

771	HAUBR22R	2	67	HAUBR22	Pancreas, Colon, Breast/Ovarian
772	HBAFN19R	3	257	HBAFN19	Lung, Colon, Breast/Ovarian
773	HBGOK25R	274	528	HBGOK25	Pancreas, Colon
774	HBGRA76R	2	88	HBGRA76	Pancreas, Colon
775	HGBRB47R	1	111	HGBRB47	Lung, Pancreas, Colon, Breast/Ovarian
776	HBJAS24R	1	66	HBJAS24	Colon, Breast/Ovarian
777	HBJKI05R	207	362	HBJKI05	Pancreas, Colon
778	HBKEC86R	254	409	HBKEC86	Pancreas, Colon
779	HBLGD42R	3	341	HBLGD42	Lung, Pancreas, Colon, Breast/Ovarian
780	HBPAP10R	3	65	HBPAP10	Lung, Pancreas
781	HCDBU02R	65	184	HCDBU02	Pancreas, Colon
782	HCDBU04R	64	348	HCDBU04	Lung, Pancreas, Colon
783	HCDDT61R	2	121	HCDDT61	Pancreas, Colon
784	HCEGY63R	2	79	HCEGY65	Pancreas, Colon
785	HCHAK80R	1	513	HCHAK80	Colon, Breast/Ovarian
786	HCHMW79R	73	432	HCHMW79	Pancreas, Breast/Ovarian
787	HCHOB92R	93	350	HCHOB92	Colon, Breast/Ovarian
788	HCLBX001R	45	149	HCLBX001	Lung, Colon
789	HCQAN60R	3	122	HCQAN60	Pancreas, Colon
790	HCRAK70R	3	293	HCRAK70	Colon, Breast/Ovarian
791	HCRPC63R	1	129	HCRPC63	Pancreas, Colon
792	HCUDC51R	2	265	HCUDC51	Lung, Colon

793	HDPIF140R	139	453	HDPIF140	Lung, Pancreas, Breast/Ovarian
794	HDPLP23R	1	141	HDPLP23	Pancreas, Colon, Breast/Ovarian
795	HDPRZ54R	1	165	HDPRZ54	Colon, Breast/Ovarian
796	HE9DP46R	2	166	HE9DP46	Lung, Pancreas, Colon
797	HEGAR19R	361	534	HEGAR19	Lung, Colon
798	HFAUO64R	27	137	HFAUO64	Colon, Breast/Ovarian
799	HFIAL90R	186	308	HFIAL90	Lung, Colon
800	HHBEQ12R	218	514	HHBEQ12	Lung, Pancreas
801	HHEUL94R	2	127	HHEUL94	Lung, Pancreas, Colon
802	HISCF76R	16	153	HISCF76	Pancreas, Colon
803	HJMAU64R	1	207	HJMAU64	Lung, Colon
804	TIIPC125R	275	508	TIIPC125	Lung, Pancreas, Colon
805	HKBAC48R	369	542	HKBAC48	Lung, Pancreas, Colon, Breast/Ovarian
806	HKBAD57R	165	341	HKBAD57	Lung, Pancreas
807	HKDBA91R	3	332	HKDBA91	Pancreas, Colon
808	HKGDB80R	3	224	HKGDB80	Lung, Colon
809	HLDNC95R	289	537	HLDNC95	Lung, Pancreas, Prostate, Colon
810	HMSNI52R	2	271	HMSNI52	Lung, Pancreas
811	HODAY16R	134	298	HODAY16	Colon, Breast/Ovarian
812	HODEA57R	289	471	HODEA57	Lung, Pancreas
813	HOEMO27R	1	60	HOEMO27	Colon, Breast/Ovarian

814	HOEMO62R	2	73	HOEMO62	Pancreas, Breast/Ovarian
815	HOEMS18R	1	102	HOEMS18	Lung, Pancreas, Colon, Breast/Ovarian
816	HOENU53R	115	267	HOENU53	Lung, Colon
817	HOGAP33R	1	498	HOGAP33	Pancreas, Prostate, Breast/Ovarian
818	HOSMV34R	124	327	HOSMV34	Lung, Pancreas, Breast/Ovarian
819	HOSNF25R	405	587	HOSNF25	Pancreas, Colon
820	HOUHO32R	230	391	HOUHO32	Lung, Colon
821	HPIAC23R	2	286	HPIAC23	Lung, Breast/Ovarian
822	HRAAD31R	115	414	HRAAD31	Lung, Colon
823	HRACR12R	2	100	HRACR12	Pancreas, Colon
824	HRADJ57R	2	142	HRADJ57	Lung, Colon
825	HROAX48R	184	285	HROAX48	Pancreas, Colon
826	HTAHR87R	369	491	HTAHR87	Lung, Pancreas
827	HTTIO45R	1	288	HTTIO45	Colon, Breast/Ovarian
828	HTWDH05R	1	420	HTWDH05	Lung, Pancreas, Colon, Breast/Ovarian
829	HUFDS13R	51	152	HUFDS13	Pancreas, Colon
830	HUSZE86R	2	340	HUSZE86	Pancreas, Colon
831	HUTHF75R	161	418	HUTHF75	Lung, Pancreas, Breast/Ovarian
832	HWAFW07R	3	170	HWAFW07	Lung, Pancreas, Colon
833	HWLIB82R	209	403	HWLIB82	Pancreas, Colon
834	HWLLX91R	147	302	HWLLX91	Lung, Colon
835	HWLMZ54R	1	120	HWLMZ54	Pancreas, Colon

836	HMIA178R			173	319		HMIA178	Pancreas, Colon, Breast/Ovarian
837	HGCFJ39R	unknown product specific to adipose tissue [Homo sapiens] >sp Q15847 Q15847 HYPOTHETICAL 7.9 KD PROTEIN. Length = 76	gnl P D d100882	1	153	100	HGCFJ39	Pancreas, Colon
838	HAMHH32R			1	123		HAMHH32	Lung, Colon
839	HAQBQ95R			104	205		HAQBQ95	Colon, Breast/Ovarian
840	HAGHY58R	URF 1 (NADH dehydrogenase subunit) [Homo sapiens] >gi 337189 protein 1 [Homo sapiens] >pir A00407 DNHUN1 NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain 1 - human mitochondrion (SGC1) >sp P03886 NUIM_HUMAN NADH-UBIQUINONE OXIDOREDUCTASE CHAIN 1 (EC 1.6	gi 13004	157	411	95	HAGHY58	Lung, Colon
841	HOSNE37R	URF 2 (NADH dehydrogenase subunit) [Homo sapiens] >gi 2052363 protein 2 [Homo sapiens] >gi 2582057 (AF014882) NADH dehydrogenase subunit 2 [Homo sapiens] >gi 2582061 (AF014884) NADH dehydrogenase subunit 2 [Homo sapiens] >gi 2582063 (AF014885) NADH dehydr	gi 578710	73	231	59	HOSNE37	Lung, Pancreas, Colon
842	HWAFE41R	VDUP1=1,25-dihydroxyvitamin D-3 up-regulated [human, HL-60 promyelocytic leukemia cells, P<ptide, 391 aa] [Homo sapiens] Length = 391	bbs 155932	2	508	84	HWAFE41	Pancreas, Colon

The first column of Table 1 shows the "SEQ ID NO:" for each of the 842 cancer antigen polynucleotide sequences of the invention.

The second column in Table 1, provides a unique "Sequence/Contig ID" identification for each cancer associated sequence. The third column in Table 1, "Gene Name," provides a putative identification of the gene based on the sequence similarity of its translation product to an amino acid sequence found in a publicly accessible gene database, such as GenBank (NCBI). The great majority of the cDNA sequences reported in Table 1 are unrelated to any sequences previously described in the literature. The fourth column, in Table 1, "Overlap," provides the database accession no. for the database sequence having similarity. The fifth and sixth columns in Table 1 provide the location (nucleotide position nos. within the contig), "Start" and "End", in the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred ORF shown in the sequence listing as SEQ ID NO:Y. In one embodiment, the invention provides a protein comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by the nucleotide position nos. "Start" and "End". Also provided are polynucleotides encoding such proteins and the complementary strand thereto. The seventh and eighth columns provide the "% Identity" (percent identity) and "% Similarity" (percent similarity) observed between the aligned sequence segments of the translation product of SEQ ID NO:X and the database sequence.

The ninth column of Table 1 provides a unique "Clone ID" for a clone related to each contig sequence. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig and at least a portion of SEQ ID NO:X was determined by directly sequencing the referenced clone. The reference clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length cDNA can be obtained by methods described elsewhere herein.

The tenth column of Table 1, "Tissue," provides the tissue source where each unique SEQ ID NO:X was found to be predominantly expressed.

Table 3 indicates public ESTs, of which at least one, two, three, four, five, ten, or more of any one or more of these public ESTs are optionally excluded from the invention.

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing as SEQ ID NO:1 through SEQ ID NO:842) and the translated SEQ ID NO:Y



(where Y may be any of the polypeptide sequences disclosed in the sequence listing as SEQ ID NO:843 through SEQ ID NO:1684) are sufficiently accurate and otherwise suitable for a variety of uses well known in the-art and described further below. For instance, SEQ ID NO:X has uses including, but not limited to, in designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the related cDNA clone contained in a library deposited with the ATCC. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling immediate applications in chromosome mapping, linkage analysis, tissue identification and/or typing, and a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y have uses that include, but are not limited to, generating antibodies which bind specifically to the cancer antigen polypeptides, or fragments thereof, and/or to the cancer antigen polypeptides encoded by the cDNA clones identified in Table 1.

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing the related cDNA clone (deposited with the ATCC, as set forth in Table 1). The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. Further, techniques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X.

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

The present invention also relates to vectors or plasmids which include such DNA sequences, as well as the use of the DNA sequences. The material deposited with the ATCC on:

5 **Table 2**

ATCC Deposits	Deposit Date	ATCC Designation Number
LP01, LP02, LP03, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11,	May-20-97	209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069
LP12	Jan-12-98	209579
LP13	Jan-12-98	209578
LP14	Jul-16-98	203067
LP15	Jul-16-98	203068
LP16	Feb-1-99	203609
LP17	Feb-1-99	203610
LP20	Nov-17-98	203485
LP21	Jun-18-99	PTA-252
LP22	Jun-18-99	PTA-253
LP23	Dec-22-99	PTA-1081

each is a mixture of cDNA clones derived from a variety of human tissue and cloned in either a plasmid vector or a phage vector, as shown in Table 5. These deposits are referred to as "the deposits" herein. The tissues from which the clones were derived are listed in Table 5, and the vector in which the cDNA is contained is also indicated in Table 5. The deposited material includes the cDNA clones which were partially sequenced and are related to the SEQ ID NO:X described in Table 1 (column 9). Thus, a clone which is isolatable from the ATCC Deposits by use of a sequence listed as SEQ ID NO:X may include the entire coding region of a human gene or in other cases such clone may include a substantial portion of the coding region of a human gene. Although the sequence listing lists only a portion of the DNA sequence in a clone included in the ATCC Deposits, it is well within the ability of one skilled in the art to complete the sequence of the DNA included in a clone isolatable from the

ATCC Deposits by use of a sequence (or portion thereof) listed in Table I by procedures hereinafter further described, and others apparent to those skilled in the art.

Also provided in Table 5 is the name of the vector which contains the cDNA clone. Each vector is routinely used in the art. The following additional information is provided for  
5 convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., *Strategies* 5:58-61 (1992)) are commercially available from Stratagene  
10 Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain  
15 XL-1 Blue, also available from Stratagene.

Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus*  
20 15:59 (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR<sup>®</sup>2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.*  
25 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the cDNA contained in a deposited cDNA clone. The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the  
30 disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the cDNA contained in the related cDNA clone in the deposit, using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X, and/or the related cDNA clone (See, e.g., columns 1 and 9 of Table 1). The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in a deposited library. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by the the dDNA in the related cDNA clone contained in a deposited library, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of, the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the related cDNA clone contained in a deposited library.

Many polynucleotide sequences, such as EST sequences, are publicly available and accessible through sequence databases and may have been publicly available prior to conception of the present invention. Preferably, such related polynucleotides are specifically excluded from the scope of the present invention. To list every related sequence would unduly burden the disclosure of this application. Accordingly, for each "Contig Id" listed in the first column of Table 3, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described in the second column of Table 3 by the general formula of a-b, each of which are uniquely defined for the SEQ ID NO:X corresponding to that Contig Id in Table 1. Additionally, specific embodiments are directed to polynucleotide sequences excluding at least one, two, three, four, five, ten, or more of the specific polynucleotide sequences referenced by the Genbank Accession No. for each Contig Id which may be

included in column 3 of Table 3. In no way is this listing meant to encompass all of the sequences which may be excluded by the general formula, it is just a representative example.

Table 3.

Sequence/ Contig ID	General formula	Genbank Accession No.
507291	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 542 of SEQ ID NO:1, b is an integer of 15 to 556, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:1, and where b is greater than or equal to a + 14.	
508000	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2648 of SEQ ID NO:2, b is an integer of 15 to 2662, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:2, and where b is greater than or equal to a + 14.	T40333, T41194, T66286, T66339, T73997, T86453, T87207, R17614, R19835, R43336, R45934, R48920, R53521, R43336, R45934, R61813, R75928, R75937, H30115, H42959, H39114, H43825, AA028010, AA028107, AA028148, AA031964, AA032046, AA035668, AA190570, AA233781, AA461489, AA460726, AA460898
518325	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 324 of SEQ ID NO:3, b is an integer of 15 to 338, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:3, and where b is greater than or equal to a + 14.	
523111	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 799 of SEQ ID NO:4, b is an integer of 15 to 813, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:4, and where b is greater than or equal to a + 14.	
526869	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 887 of SEQ ID NO:5, b is an integer of 15 to 901, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:5, and where b is greater than or equal to a + 14.	AA459771
532211	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 717 of SEQ ID NO:6, b is an integer of 15 to 731, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:6, and where b is greater than or equal to a + 14.	H30209, H92182, W95693, W95692, AA196967
532247	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	R14583, R93797, H52942, H75493, H78857, W17094, W38705, W81551, W90159, N90874, AA010244.

	where a is any integer between 1 to 2760 of SEQ ID NO:7, b is an integer of 15 to 2774, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:7, and where b is greater than or equal to a + 14.	AA029093, AA126501, AA147066
537932	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2599 of SEQ ID NO:8, b is an integer of 15 to 2613, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:8, and where b is greater than or equal to a + 14.	T91131, T84801, T85952, R59198, R59256, H43456, H59480, H79111, N26560, N35676, N64506, N66078, N76033, N78705, W07594, W70111, W70169, N90844, AA026910, AA026911, AA057689, AA079631, AA079805, AA131257, AA136081, AA165115, AA210764, AA211886, AA232838, AA262352
540117	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1087 of SEQ ID NO:9, b is an integer of 15 to 1101, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:9, and where b is greater than or equal to a + 14.	T49371, T49372, T49850, T61568, T64892, N39534, W57682, AA031859
547710	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1359 of SEQ ID NO:10, b is an integer of 15 to 1373, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:10, and where b is greater than or equal to a + 14.	R11154, R11155, R61204, R61205, R82674, H06105, R88575, R88638, H89977, H97031, N20224, W01143, W39387, W90318, W90788, AA001027, AA045864, AA045839, AA070190, AA070357, AA070481, AA074270, AA099007, AA099084, AA100370, AA112324, AA113319, AA158425, AA161510, AA171909, AA172133, AA173087, AA181768, AA188815, AA188874, AA190370, AA226831, AA252143
551747	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3790 of SEQ ID NO:11, b is an integer of 15 to 3804, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:11, and where b is greater than or equal to a + 14.	
552799	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2143 of SEQ ID NO:12, b is an integer of 15 to 2157, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:12, and where b is greater than or equal to a + 14.	
553243	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1103 of SEQ ID NO:13, b is an integer of 15 to 1117, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:13, and where b is	H63183, W61352, AA151059

	greater than or equal to $a + 14$ .	
553368	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 871 of SEQ ID NO:14, b is an integer of 15 to 885, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:14, and where b is greater than or equal to $a + 14$ .	
554349	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1010 of SEQ ID NO:15, b is an integer of 15 to 1024, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:15, and where b is greater than or equal to $a + 14$ .	
558491	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 531 of SEQ ID NO:16, b is an integer of 15 to 545, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:16, and where b is greater than or equal to $a + 14$ .	
558983	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 609 of SEQ ID NO:17, b is an integer of 15 to 623, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:17, and where b is greater than or equal to $a + 14$ .	
572943	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 545 of SEQ ID NO:18, b is an integer of 15 to 559, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:18, and where b is greater than or equal to $a + 14$ .	
585892	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1341 of SEQ ID NO:19, b is an integer of 15 to 1355, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:19, and where b is greater than or equal to $a + 14$ .	
589390	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1266 of SEQ ID NO:20, b is an integer of 15 to 1280, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:20, and where b is greater than or equal to $a + 14$ .	T47628, T49403, T49829, T49830, T50800, T50963, T51976, T55846, T55860, T55896, T55911, T58744, T58811, T58891, T59252, T59279, T59293, T59615, T59690, T59727, T59826, T60434, T60514, T60584, T61357, T40352, T62559, T62688, T62839, T63122, T64603, T64640.



		T67682, T67756, T68181, T68439, T68506, T68606, T68718, T68783, T68839, T68849, T68976, T69049, T71223, T71347, T71509, T71853, T71858, T71938, T72197, T72264, T72414, T72471, T72923, T73204, T73259, T73283, T73446, T73607, T73621, T73645, T73713, T73744, T73772, T73796, T74114, T74545, T74599, T87829, T90307, T90394, T91481, T92437, T92617, T81767, T82080, R27059, R27060, R31693, R31735, R50548, R50646, R64321, R64322, R75660, R75768, R75866, R76038, R79765, R79766, H22209, H24391, H25902, H27236, H28585, H29860, H29954, H41994, H42226, H42298, H43069, H43893, H43934, R83465, R84983, R94905, R94988, R96360, R96403, R97059, R98674, R98900, R99186, R99187, H50701, H50801, H57754, H62182, H63649, H63650, H64755, H64756, H69075, H70056, H70057, H70855, H70856, H71581, H75758, H75893, H80974, H80975, H83141, H83142, H83271, H85046, H84668, H91780, H92207, H92350, H94891, H94943, H94966, H95486, H99418, N52264, N58261, N74184, N77638, N81021, N92261, N99137, W04350, W07850, W16893, W39467, W45038, W47174, W47433, W52853, W63782, W67635, W67759, W67868, W67881, W93706, W94183, W96351, W96352, N89587, AA012898, AA019884, AA020863, AA025865, AA025866, AA056092, AA057434, AA070445, AA192155, AA192879, AA226741, AA227477
596882	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1177 of SEQ ID NO:21, b is an integer of 15 to 1191, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:21, and where b is greater than or equal to a + 14.	
616289	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 839 of SEQ ID NO:22, b is an integer of 15 to 853, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:22, and where b is greater than or equal to a + 14.	
622140	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	W39497, W52751, AA099814, AA128882, AA173072, AA226739

	sequence described by the general formula of a-b, where a is any integer between 1 to 460 of SEQ ID NO:23, b is an integer of 15 to 474, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:23, and where b is greater than or equal to a + 14.	
623566	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2266 of SEQ ID NO:24, b is an integer of 15 to 2280, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:24, and where b is greater than or equal to a + 14.	
647714	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1047 of SEQ ID NO:25, b is an integer of 15 to 1061, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:25, and where b is greater than or equal to a + 14.	
647752	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1558 of SEQ ID NO:26, b is an integer of 15 to 1572, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:26, and where b is greater than or equal to a + 14.	
651774	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1991 of SEQ ID NO:27, b is an integer of 15 to 2005, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:27, and where b is greater than or equal to a + 14.	T69901, T69949, T70775, R20554, R33030, R33917, R48406, H58331, H58720, H67041, H68124, H93586, H94430, H94513, H97468, H99219, N23459, N26334, N35428, N49203, N50256, N64246, N93349, W19550, W19996, W25330, W73940, W77984, W93791, W94028, N90424, AA025537, AA025680, AA025371, AA026317, AA026318, AA084549, AA086048, AA086130, AA098995, AA099068, AA115309, AA136486, AA151843, AA149689, AA148825, AA150406, AA150425, AA173377
651995	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1394 of SEQ ID NO:28, b is an integer of 15 to 1408, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:28, and where b is greater than or equal to a + 14.	
652156	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 903 of SEQ ID NO:29, b is an integer of 15 to 917, where both a and	T40364, R22492, R49907, R49908, R62310, R62311, R65652, R67030, R81699, R81700, H18589, H20024, H20099, H20123, H20797, H22404, H22615, H25816, H27051, H42294,

	b correspond to the positions of nucleotide residues shown in SEQ ID NO:29, and where b is greater than or equal to a + 14.	H44827, H49661, H51422, H51465, H56482, H56483, H70295, H86037, H93528, H93860, H96113, H96114, N22715, N31188, N33831, N54495, N70601, N70623, N76607, N78626, W04920, W05505, W07305, W15350, W39442, W60859, W60860, W72726, W76452, AA017463, AA024543, AA024544, AA026421, AA026498, AA027270, AA034429, AA046316, AA046142, AA053920, AA056230, AA063244, AA062885, AA085305, AA128171, AA126216, AA149890, AA150552, AA187825, AA188597, AA417004, AA417190
653010	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 563 of SEQ ID NO:30, b is an integer of 15 to 577, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:30, and where b is greater than or equal to a + 14.	
655904	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2045 of SEQ ID NO:31, b is an integer of 15 to 2059, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:31, and where b is greater than or equal to a + 14.	T61561, T90265, T90707, R09280, R17627, R43348, R54854, R54658, H20872, H27229, H64571, H64673, H64571, N47495, N54722, N75461, W73679, AA010711, AA010712, AA082107, AA130516, AA132052, AA132156, AA147852, AA147908, AA148276, AA148277, AA181933, AA187549, AA187845, AA186675, AA188310, AA193212
657852	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 535 of SEQ ID NO:32, b is an integer of 15 to 549, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:32, and where b is greater than or equal to a + 14.	
666414	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 827 of SEQ ID NO:33, b is an integer of 15 to 841, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:33, and where b is greater than or equal to a + 14.	
667847	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 849 of SEQ ID NO:34, b is an integer of 15 to 863, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:34, and where b is greater than or equal to a + 14.	T47009, T47010, T55133, T55301, T57663, T57702, T59664, T59797, T59800, T49370, T72020, T26631, R22343, R46325, R48879, R50151, R50204, R55208, R71485, R71535, R72144, R72362, R72553, R74062, H13587, H16167, H18121, H20172, H20361, H22514, H40774, H40775,

		H42435, H42865, H43100, H43164, H45140, H45441, H46013, H46083, H46159, R97084, R97131, H56498, H60260, H60567, H67238, H71802, H77325, H77338, H81556, H87775, H87825, H91889, H92057, H93187, H96056, H96420, H81556, H99575, N21484, N23829, N24221, N26831, N27079, N27278, N27582, N30213, N30255, N31642, N31989, N31996, N32655, N32790, N35515, N38983, N39859, N40012, N40488, N41792, N41978, N54988, N57097, N70071, N77176, N78930, N80037, N80573, N81058, N92768, N93810, W07000, W07659, W07868, W44961, W44962, W58175, W58263, W58182, AA001206, AA017579, AA026640, AA026706, AA057605, AA058758, AA082491, AA084088, AA086460, AA100968, AA112029, AA121337, AA121500, AA130704, AA130790, AA152420, AA156094, AA156123, AA181929, AA182575, AA182617, AA186931, AA195982, AA253952, AA283976, AA426098, AA425122, AA428823, AA429359
670188	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1216 of SEQ ID NO:35, b is an integer of 15 to 1230, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:35, and where b is greater than or equal to a + 14.	
670279	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 626 of SEQ ID NO:36, b is an integer of 15 to 640, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:36, and where b is greater than or equal to a + 14.	T50781, T51265, T55324, T56327
670729	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 583 of SEQ ID NO:37, b is an integer of 15 to 597, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:37, and where b is greater than or equal to a + 14.	
674123	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 610 of SEQ ID NO:38, b is an integer of 15 to 624, where both a and b correspond to the positions of nucleotide residues	

	shown in SEQ ID NO:38, and where b is greater than or equal to a + 14.	
676496	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1015 of SEQ ID NO:39, b is an integer of 15 to 1029, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:39, and where b is greater than or equal to a + 14.	
678162	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1093 of SEQ ID NO:40, b is an integer of 15 to 1107, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:40, and where b is greater than or equal to a + 14.	T40233, T40521, T41098, T47133, T47529, T49156, T49157, T51636, T55352, T55402, T55422, T57649, T59314, T62530, T62806, T62954, T72271, T73592, T89655, T78884, R19194, R89249, R93164, H57861, H93645, N22493, N26661, N32984, N63146, N66448, N67443, N69984, N72141, N77952, N78933, N81091, N95826, W02074, W24850, W24972, W38365, W44897, W57997, W58080, W65414, W65435, W74634, AA007562, AA009767, AA022918, AA022939, AA025169, AA029717, AA029656, AA032096, AA040581, AA046091, AA070493, AA070646, AA070707, AA071405, AA071414, AA074752, AA075706, AA075696, AA079282, AA085620, AA100126, AA126795, AA128838, AA136579, AA143069, AA143200, AA146637, AA147370, AA147705, AA156001, AA157342, AA161090, AA164798, AA179749, AA187235, AA188048, AA187029, AA188384, AA192271, AA196973, AA235468, AA243180, AA459416, AA459642
678248	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1037 of SEQ ID NO:41, b is an integer of 15 to 1051, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:41, and where b is greater than or equal to a + 14.	
683668	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2178 of SEQ ID NO:42, b is an integer of 15 to 2192, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:42, and where b is greater than or equal to a + 14.	T49549, T49550, T49700, T49912, T49937, T50912, T51558, T53285, T53375, T53376, T53721, T54314, T54840, T55217, T56413, T99069, T99669, R01522, R31653, R32820, R32921, R35743, R50997, R64077, R65723, R69349, R71009, R72798, R72824, R76854, R77142, R79240, R79511, R80194, R80295, R81155, H39823, H39824, R84909, R85592, R91193, H50793, H52341, H53594, H53916, H92997, N26572, N32090.

		N32406, N34179, N36271, N45401, N49216, N50267, N67233, N67568, N72254, N75478, N93355, N94504, W00543, W05288, W05816, W23954, W24625, W24650, W25354, W49666, W52302, AA121852, AA121851, AA128593, AA128712, AA136731, AA136688, AA167235, AA167584, AA173693, AA176648, AA176804, AA179999, AA181456, AA181457, AA256158, AA256215, AA256247, AA458729, AA458778, AA464936, AA464937
693172	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 339 of SEQ ID NO:43, b is an integer of 15 to 353, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:43, and where b is greater than or equal to a + 14.	T49005, T50129, T54766, T59468, T71241, T89633, R66699, R67578, H25853, H26090, H41256, H43182, H45273, N58288, N95319, AA054338, AA057604, AA084261
694303	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3476 of SEQ ID NO:44, b is an integer of 15 to 3490, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:44, and where b is greater than or equal to a + 14.	
695042	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 767 of SEQ ID NO:45, b is an integer of 15 to 781, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:45, and where b is greater than or equal to a + 14.	
699799	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1417 of SEQ ID NO:46, b is an integer of 15 to 1431, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:46, and where b is greater than or equal to a + 14.	T50599, R25615, R31078, R68513, R70896, R75848, R76864, R76865, H01087, H26949, H63077, H75713, H75642, H95014, H98885, N24938, N33815, N47174, N47897, N51152, N53997, N59590, N62387, N63017, N67836, N69948, N78655, N79355, N94343, N98329, W01767, W03440, W15144, W19292, W25534, W37911, W42857, W42912, W48630, W72791, W76438, W81113, W80546, W80525, W80526, W84575, W84645, AA010674, AA011261, AA026981, AA031662, AA039737, AA039810, AA040524, AA040523, AA046308, AA046396, AA099365, AA101915, AA129310, AA129354, AA131951, AA186409
702216	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	T64167, T64355, T68409, T68475, T73691, T73717, T97735, T97840.

	sequence described by the general formula of a-b, where a is any integer between 1 to 1899 of SEQ ID NO:47, b is an integer of 15 to 1913, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:47, and where b is greater than or equal to a + 14.	T98899, T99491, R00460, R01214, R01326, H45786, R93124, R96609, H61118, H61119, H61454, H62460, H64003, H64052, H91078, H91378, N58480, N64695, N65991, N74260, N78070, N79244, N91708, N95101, W03761, W04301, N90479, AA130077, AA130076, AA152275, AA150441
703015	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1747 of SEQ ID NO:48, b is an integer of 15 to 1761, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:48, and where b is greater than or equal to a + 14.	R72819, R73270, H43839, W47195, W52204, AA242894, AA424584, AA424629
706391	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 942 of SEQ ID NO:49, b is an integer of 15 to 956, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:49, and where b is greater than or equal to a + 14.	T48974, H26922, H30342, H44743, H45233, R88178, H81778, H92363, N29006, N44860, N46515, AA079547, AA158434, AA160590, AA428285
706892	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 549 of SEQ ID NO:50, b is an integer of 15 to 563, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:50, and where b is greater than or equal to a + 14.	
706924	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3201 of SEQ ID NO:51, b is an integer of 15 to 3215, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:51, and where b is greater than or equal to a + 14.	T68892, T68966, T75421, R15205, R16398, R41650, R42339, R52995, R52996, R41650, H12000, H16753, H16861, H27652, H27653, H27982, H28497, H29323, H29416, H85752, H98511, N22580, N24339, N28586, N42727, N50084, N75803, N78815, W07245, W21306, W23840, W57924, W58128, W72277, W76304, W86460, AA002243, AA002080, AA025565, AA025683, AA026606, AA026718, AA150696, AA150801
707642	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 612 of SEQ ID NO:52, b is an integer of 15 to 626, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:52, and where b is greater than or equal to a + 14.	
710369	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 906 of SEQ ID NO:53, b is an integer of 15 to 920, where both a and	T48815, T60685, T91108, T99835, AA150217, AA157340, AA157240, AA171947

	b correspond to the positions of nucleotide residues shown in SEQ ID NO:53, and where b is greater than or equal to a + 14.	
718826	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1076 of SEQ ID NO:54, b is an integer of 15 to 1090, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:54, and where b is greater than or equal to a + 14.	
719790	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1450 of SEQ ID NO:55, b is an integer of 15 to 1464, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:55, and where b is greater than or equal to a + 14.	T47380, T47538, T47539, T53445, T53446, T54910, T55077, T59959, T60032, T62504, T62649, T63049, T63297, T63382, T65688, T71591, T71742, T93094, T93187, T94131, T94222, T91210, T84959, T99044, T99045, R26119, R26148, R33224, R35866, R36526, R53923, R53924, R69596, R69684, R76209, R76210, R79249, R79521, H03427, H03507, H12529, H13501, H19016, H19310, H21587, H21652, H21653, H30119, H39693, H42698, H46635, R93371, R98210, R99855, H54120, H54786, H54837, H58991, H65355, H65566, H67613, H72632, H74102, H95312, N48235, N58029, N64226, N66907, N70763, N78303, N93848, N94316, N95432, N98433, W01816, W02218, W05772, W21419, W24044, W24297, W30823, W32382, W37228, W37317, W40321, W42528, W46445, W49731, W51944, W53011, W53012, W60051, W60129, W60154, W68332, W68216, W72730, W74593, W92813, W93310, AA010985, AA011307, AA031435, AA035708, AA037040, AA053073, AA053374, AA055567, AA069724, AA069690, AA069682, AA069900, AA069951, AA070693, AA071421, AA074606, AA075555, AA075673, AA075544, AA081017, AA081251, AA081428, AA082119, AA082022, AA082213, AA082241, AA082247, AA082400, AA082365, AA082438, AA082679, AA083225, AA083266, AA083508, AA083411, AA083637, AA084202, AA099623, AA102015, AA099659, AA100102, AA100163, AA100429, AA100430, AA100455, AA100456, AA100711, AA100764, AA100906, AA100919, AA100963, AA101118, AA102494, AA101184, AA112123, AA122359, AA122360, AA126882, AA127103, AA128195, AA128674, AA128686, AA128741.



		AA128747, AA128785, AA133488, AA133489, AA130006, AA130007, AA134211, AA130492, AA130507, AA134345, AA134346, AA134457, AA134458, AA134461, AA134462, AA130907, AA131020, AA131973, AA132141, AA132493, AA132601, AA134904, AA135121, AA135182, AA135348, AA136318, AA143066, AA143256, AA143278, AA143386, AA146650, AA146835, AA146836, AA146860, AA146861, AA146870, AA146871, AA146918, AA147716, AA147707, AA147868, AA148130, AA148090, AA148091, AA152422, AA148435, AA148867, AA148492, AA148702, AA151453, AA151452, AA151828, AA155801, AA155886, AA156025, AA156044, AA156053, AA156155, AA156222, AA157080, AA157168, AA157325, AA157423, AA157434, AA157471, AA157605, AA157631, AA157546, AA157775, AA157826, AA158157, AA158273, AA158888, AA158887, AA159153, AA159250, AA160104, AA159856, AA161278, AA161301, AA160817, AA164741, AA165616, AA165606, AA173037, AA173038, AA176229, AA176317, AA179185, AA179190, AA179200, AA181043, AA181262, AA181342, AA181834, AA181989, AA182794, AA187247, AA187342, AA187379, AA187470, AA187528, AA187740, AA187911, AA188028, AA186378, AA186424, AA186441, AA186442, AA186568, AA186653, AA186661, AA186703, AA186910, AA187081, AA187087, AA187078, AA187135, AA188313, AA188330, AA188342, AA190473, AA193219
720222	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 971 of SEQ ID NO:56, b is an integer of 15 to 985, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:56, and where b is greater than or equal to a + 14.	AA056718, AA428747
724033	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1232 of SEQ ID NO:57, b is an integer of 15 to 1246, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:57, and where b is greater than or equal to a + 14.	N50855, AA076233, AA076232

724767	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1952 of SEQ ID NO:58, b is an integer of 15 to 1966, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:58, and where b is greater than or equal to a + 14.	
727065	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1597 of SEQ ID NO:59, b is an integer of 15 to 1611, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:59, and where b is greater than or equal to a + 14.	T26554, R31862, R31869, R67140, R70861, H00137, H23051, H23350, H60670, N28391, N28646, AA081571
727246	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1835 of SEQ ID NO:60, b is an integer of 15 to 1849, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:60, and where b is greater than or equal to a + 14.	
727932	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 219 of SEQ ID NO:61, b is an integer of 15 to 233, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:61, and where b is greater than or equal to a + 14.	
731167	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2319 of SEQ ID NO:62, b is an integer of 15 to 2333, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:62, and where b is greater than or equal to a + 14.	
732514	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1456 of SEQ ID NO:63, b is an integer of 15 to 1470, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:63, and where b is greater than or equal to a + 14.	
734080	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 925 of SEQ ID NO:64, b is an integer of 15 to 939, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:64, and where b is greater than or equal to a + 14.	
734288	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2054 of SEQ ID NO:65, b is an integer of 15 to 2068, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:65, and where b is greater than or equal to a + 14.	
739448	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1377 of SEQ ID NO:66, b is an integer of 15 to 1391, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:66, and where b is greater than or equal to a + 14.	T53676, T53677, T54741, T55855, T55906, T56935, T57622, T58975, T58979, T61059, T61143, T90498, T90594, T93775, R07734, R07735, R40067, R75954, R75978, R76790, R76809, R77290, R77315, R77348, R79433, R79434, R97814, H50168, H70091, H77406, H80889, H82088, H82195, N33576, N39028, N48219, N49421, N52598, N66328, N67208, N73788, N78932, N92856, N99411, W07071, W17213, W24422, W25582, W47407, W47574, W49651, W49725, W68140, W68467, AA025829, AA025972, AA074731, AA074835, AA075316, AA081368, AA081369, AA082652, AA082810, AA101054, AA102495, AA115718, AA115719, AA127079, AA127080, AA127200, AA127199, AA128645, AA128813, AA133732, AA130465, AA130466, AA132111, AA143233, AA143289, AA146780, AA147706, AA148134, AA151491, AA157062, AA157046, AA157630, AA165124, AA165123, AA164625, AA165420, AA165583, AA173407, AA173462, AA179910, AA179911, AA180198, AA181087, AA181556, AA182450, AA182951, AA186670, AA188289, AA192925, AA193075, AA464823.
739668	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 645 of SEQ ID NO:67, b is an integer of 15 to 659, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:67, and where b is greater than or equal to a + 14.	
740060	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2967 of SEQ ID NO:68, b is an integer of 15 to 2981, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:68, and where b is greater than or equal to a + 14.	
741560	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 589 of SEQ ID NO:69, b is an integer of 15 to 603, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:69, and where b is greater than or equal to a + 14.	
742543	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1087 of SEQ ID NO:70, b is an integer of 15 to 1101, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:70, and where b is greater than or equal to a + 14.	
742831	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 700 of SEQ ID NO:71, b is an integer of 15 to 714, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:71, and where b is greater than or equal to a + 14.	
745327	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2876 of SEQ ID NO:72, b is an integer of 15 to 2890, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:72, and where b is greater than or equal to a + 14.	
745695	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2474 of SEQ ID NO:73, b is an integer of 15 to 2488, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:73, and where b is greater than or equal to a + 14.	T56303, T58644, T58694, R48815, R48816, R68140, R74376, R78015, R81014, H00852, H01233, H17193, H17969, H25101, H27005, H30607, H41236, H42218, H42290, H42904, H42977, H45271, H45342, R83816, R98855, R98939, H53696, H62059, H82544, H83097, N40713, N92791, W19377, AA025571, AA053695, AA053675, AA069167, AA069166, AA076604, AA076603, AA079426, AA100088, AA099771, AA130265, AA158402, AA179641, AA235643, AA253454, AA250758, AA458951, AA458978, AA459194, AA419280, AA419329, AA425117, AA430664
750316	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 697 of SEQ ID NO:74, b is an integer of 15 to 711, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:74, and where b is greater than or equal to a + 14.	
750522	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 892 of SEQ ID	

	NO:75, b is an integer of 15 to 906, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:75, and where b is greater than or equal to a + 14.	
750583	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 257 of SEQ ID NO:76, b is an integer of 15 to 271, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:76, and where b is greater than or equal to a + 14.	
751020	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 659 of SEQ ID NO:77, b is an integer of 15 to 673, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:77, and where b is greater than or equal to a + 14.	N80268, N95387, W57806, W63590, AA182782, AA187759, AA199806, AA262640, AA262111, AA262106, AA460214
752196	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 353 of SEQ ID NO:78, b is an integer of 15 to 367, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:78, and where b is greater than or equal to a + 14.	R67541
753084	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1330 of SEQ ID NO:79, b is an integer of 15 to 1344, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:79, and where b is greater than or equal to a + 14.	T93791, T93840, R77826, R78199, R99272, H54274, H65600, H67128, H75533, H75532, H81433, N57836, N58786, N72699, N77475, W02480, W78743, W80625, W90276, AA007397, AA127528, AA127529, AA130419, AA147733, AA150095, AA195008, AA195060
754957	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3734 of SEQ ID NO:80, b is an integer of 15 to 3748, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:80, and where b is greater than or equal to a + 14.	
756557	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1877 of SEQ ID NO:81, b is an integer of 15 to 1891, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:81, and where b is greater than or equal to a + 14.	
756712	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1940 of SEQ ID NO:82, b is an integer of 15 to 1954, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:82, and where b is greater than or equal to a + 14.	
757414	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 922 of SEQ ID NO:83, b is an integer of 15 to 936, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:83, and where b is greater than or equal to a + 14.	T49651, T49652, T92946, T93013, H02307, H02419, N42072, AA169576
757614	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1499 of SEQ ID NO:84, b is an integer of 15 to 1513, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:84, and where b is greater than or equal to a + 14.	T93709, T96172, H00439, H00480, R85176, H51264, H51834, H53645, H57470, H57991, H73334, N33138, N42318, N94987, AA028955, AA081550, AA082013, AA113225, AA113810, AA133619, AA133522, AA132699, AA132810, AA151877, AA149662, AA157324, AA157422, AA159905, AA165014, AA165442, AA165443, AA167837, AA166621, AA166924, AA195339, AA195338, AA252790
757815	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1284 of SEQ ID NO:85, b is an integer of 15 to 1298, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:85, and where b is greater than or equal to a + 14.	
759878	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1995 of SEQ ID NO:86, b is an integer of 15 to 2009, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:86, and where b is greater than or equal to a + 14.	
760227	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 520 of SEQ ID NO:87, b is an integer of 15 to 534, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:87, and where b is greater than or equal to a + 14.	
760312	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4288 of SEQ ID NO:88, b is an integer of 15 to 4302, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:88, and where b is greater than or equal to a + 14.	
766051	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	T57753, T60650, R11036, R11084, R00826, R01482, H87221, N25112.

	sequence described by the general formula of a-b, where a is any integer between 1 to 2768 of SEQ ID NO:89, b is an integer of 15 to 2782, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:89, and where b is greater than or equal to a + 14.	N33451, N42424, N47338, N48186, N62628, N68902, N71490, N78399, N99533, W16943, W78948, W85915, W95743, N89568, AA039230, AA039231, AA047564, AA047582, AA047702, AA047752, AA120926, AA126453, AA135549, AA135529, AA429718
767593	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1023 of SEQ ID NO:90, b is an integer of 15 to 1037, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:90, and where b is greater than or equal to a + 14.	T51635, T57709, T61468, T63793, T63818, T92894, T92984, T94396, T75475, T75508, T87575, T79848, T85949, R25644, R27489, R70702, R78772, H44836, H44835, R84349, R86157, R89703, R99494, H48567, H48836, H57859, H83579, H86373, H86690, H88284, H97937, H98241, H99117, H99249, N24363, N24573, N26374, N27129, N31662, N36546, N40064, N45098, N45108, N53503, N59526, N63219, N64179, N64178, N66660, N70536, N72298, N98943, W02894, W19364, W60295, W60386, W72691, W77806, W93582, W93631, W92326, W92382, N90765, AA001997, AA013356, AA017023, AA017221, AA018780, AA026639, AA026705, AA029569, AA029496, AA029736, AA035387, AA035694, AA044958, AA055558, AA063564, AA100726, AA100744, AA134118, AA130301, AA151965, AA233192, AA253060, AA253117
768053	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1038 of SEQ ID NO:91, b is an integer of 15 to 1052, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:91, and where b is greater than or equal to a + 14.	
768055	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1220 of SEQ ID NO:92, b is an integer of 15 to 1234, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:92, and where b is greater than or equal to a + 14.	T68053, R09316, R09788, T84929, R24826, R66259, R68879, R80029, H00967, H89841, H96162, N39802, N44634, N68319, N70487, N71145, N72732, W01594, W52285, W73342, W85800, AA022906, AA022975, AA031962, AA032044, AA032163, AA037604, AA043694, AA043695, AA044134, AA074287, AA081041, AA081042, AA082218, AA082461, AA082475, AA083977, AA100460, AA155926, AA167365, AA171958, AA173534, AA187036, AA224429
769685	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1557 of SEQ ID	

	NO:93, b is an integer of 15 to 1571, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:93, and where b is greater than or equal to a + 14.	
771920	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1858 of SEQ ID NO:94, b is an integer of 15 to 1872, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:94, and where b is greater than or equal to a + 14.	
772790	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1502 of SEQ ID NO:95, b is an integer of 15 to 1516, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:95, and where b is greater than or equal to a + 14.	
772916	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1756 of SEQ ID NO:96, b is an integer of 15 to 1770, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:96, and where b is greater than or equal to a + 14.	
773225	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 924 of SEQ ID NO:97, b is an integer of 15 to 938, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:97, and where b is greater than or equal to a + 14.	
773632	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 297 of SEQ ID NO:98, b is an integer of 15 to 311, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:98, and where b is greater than or equal to a + 14.	
774364	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 606 of SEQ ID NO:99, b is an integer of 15 to 620, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:99, and where b is greater than or equal to a + 14.	W01405, AA172322
775355	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2497 of SEQ ID NO:100, b is an integer of 15 to 2511, where both a	T49285, T61774, T68350, T68396, T94414, T69842, T81078, R01216, R05674, R21522, R21626, R23745, R23797, R24081, R24137, R24753, R32662, R36359, R45484, R45484.



	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:100, and where b is greater than or equal to a + 14.	R63380, R63433, R70942, R70995, R73973, R78964, H08973, H09543, H16712, H16713, H20846, H20896, R99241, H82276, H82382, H84715, H85367, H85516, H89615, H95047, H96450, H97881, N20953, N21537, N22201, N25769, N29477, N30442, N37087, N42334, N42354, N66424, N66864, N67873, N71242, N73740, N94555, N99903, W45394, W46993, W46961, W46960, W46881, W73247, W90778, AA026678, AA026215, AA043908, AA044414, AA042828, AA062957, AA076063, AA121145, AA121476, AA195131, AA234043, AA234044, AA426421
775844	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2967 of SEQ ID NO:101, b is an integer of 15 to 2981, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:101, and where b is greater than or equal to a + 14.	T73286, T66741, T66742, R12147, R15080, R19321, R39271, R42973, R44589, R44589, H06197, H08725, R94752, H71652, H71653, H79764, H79765, H79770, H79762, H79761, H79771, H92246, H96184, N45199, W93244, W93245, W93258, W93257, W94615, W94654, AA001180, AA039582, AA039689, AA082198, AA157370, AA157869, AA253368
777760	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2790 of SEQ ID NO:102, b is an integer of 15 to 2804, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:102, and where b is greater than or equal to a + 14.	
779837	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 708 of SEQ ID NO:103, b is an integer of 15 to 722, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:103, and where b is greater than or equal to a + 14.	T67628, T72838, H59238, H84693, N80048, W07009, W37555, W39191, N90251, AA057629
780769	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1622 of SEQ ID NO:104, b is an integer of 15 to 1636, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:104, and where b is greater than or equal to a + 14.	T66609, T66610, T83560, R15983, R15984, R35702, R49338, R49338, H11613, R94244, H87098, H87745, W60710, W60772, W94034, AA258151, AA258913, AA425943
781445	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1547 of SEQ ID NO:105, b is an integer of 15 to 1561, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:105, and where b is	

	greater than or equal to $a + 14$ .	
781531	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 472 of SEQ ID NO:106, b is an integer of 15 to 486, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:106, and where b is greater than or equal to $a + 14$ .	
783018	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 786 of SEQ ID NO:107, b is an integer of 15 to 800, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:107, and where b is greater than or equal to $a + 14$ .	R18976
783097	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1044 of SEQ ID NO:108, b is an integer of 15 to 1058, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:108, and where b is greater than or equal to $a + 14$ .	
784198	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1062 of SEQ ID NO:109, b is an integer of 15 to 1076, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:109, and where b is greater than or equal to $a + 14$ .	
784868	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1185 of SEQ ID NO:110, b is an integer of 15 to 1199, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:110, and where b is greater than or equal to $a + 14$ .	
785428	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3616 of SEQ ID NO:111, b is an integer of 15 to 3630, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:111, and where b is greater than or equal to $a + 14$ .	T47751, T39348, T39359, T98137, T79193, T95760, R16653, R16654, R24052, R24245, R33230, R44846, R50794, R50912, R44846, R60930, R61049, R71116, R71620, R77888, R80860, H00109, H04333, H04688, H05041, H09555, H30257, H30320, H47931, R94218, R99062, R99260, H50702, H50803, H52629, H52628, H54000, H67115, H70269, H83460, H83572, H84911, H99358, N21482, N21632, N24626, N33762, N41609, N67949, N69593, N70188, N71452, N71818, N77888, N79031, N99501, W02150, W03072, W05781, W19647, W19972, W20125, W30896, W33043.

		W33197, W35407, W37262, W39072, W47654, W52846, W56143, W60064, W60074, W65501, W67522, W67591, W69745, W69926, W80811, W94093, W94156, N90996, AA039462, AA040857, AA043084, AA043810, AA053423, AA053042, AA064625, AA064709, AA115540, AA115051, AA120833, AA129500, AA129499, AA146736, AA148602, AA152314, AA150343, AA150620, AA150790, AA157282, AA160296, AA173937, AA173969, AA181340, AA188207, AA186354, AA188646, AA190484, AA199676, AA199677, AA243342, AA250981, AA459647, AA459773, AA460227
785845	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1512 of SEQ ID NO:112, b is an integer of 15 to 1526, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:112, and where b is greater than or equal to a + 14.	
785854	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 571 of SEQ ID NO:113, b is an integer of 15 to 585, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:113, and where b is greater than or equal to a + 14.	T85881, W45204
786705	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 487 of SEQ ID NO:114, b is an integer of 15 to 501, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:114, and where b is greater than or equal to a + 14.	R09422
787186	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1951 of SEQ ID NO:115, b is an integer of 15 to 1965, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:115, and where b is greater than or equal to a + 14.	
787279	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1046 of SEQ ID NO:116, b is an integer of 15 to 1060, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:116, and where b is greater than or equal to a + 14.	T62081, T97170, R17585, R42923, R48789, R48896, R54561, R54562, R54721, R54722, R42923, R72984, R73595, H23901, H43508, H46275, H46348, H47255, H47254, R83475, R89352, R91048, R93150, R93669, R94520, R98839, H48417, H48899, H48900, H50560, H54157, H58936.

		H58983, H67630, H69455, H72554, H72955, H89822, N23388, N33070, N35168, N40256, N44641, N52556, N59706, N68387, N80806, N92514, W17007, W19578, W20217, W38835, W49822, W56061, W65416, W65285, N90575, AA002190, AA045344, AA045446, AA052950, AA053432, AA082245, AA083753, AA102071, AA099961, AA101574, AA112070, AA125782, AA125931, AA135139, AA135268, AA146635, AA151603, AA149484, AA149981, AA152120, AA171975, AA172123, AA181805, AA181821, AA188148, AA188225, AA186556, AA186917, AA460297, AA461585
789002	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 695 of SEQ ID NO:117, b is an integer of 15 to 709, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:117, and where b is greater than or equal to a + 14.</p>	
789008	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2039 of SEQ ID NO:118, b is an integer of 15 to 2053, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:118, and where b is greater than or equal to a + 14.</p>	T47492, T47493, T47900, T48303, T48445, T48456, T49007, T49079, T49080, T49218, T49310, T49311, T49913, T49914, T49941, T51256, T51337, T51371, T51423, T51604, T51757, T52271, T52400, T53326, T53327, T54148, T54244, T54295, T54330, T54402, T54407, T55485, T55733, T56237, T56379, T56414, T56565, T39384, T40546, T40551, T40552, T40824, T89603, T79470, T79561, R01378, R12635, R20536, R21209, R21238, R21239, R22062, R22119, R22190, R22241, R22534, R22535, R22823, R23625, R23881, R24090, R25741, R26431, R26587, R28327, R28328, R28330, R31619, R32132, R32349, R33134, R33286, R35454, R36658, R39739, R50498, R50581, R20536, R56656, R65717, R65777, R65870, R67856, R67857, R68076, R69399, R69531, R69752, R69920, R71289, R72350, R74061, R77148, R77149, R80495, R80640, R82550, H00862, H01301, H01472, H01571, H02637, H02893, H03072, H03073, H03443, H03525, H03812, H03836, H23457, H23458, H26513, H26583, H26584, R86226, R86227, R87053, R91130, R91174, R92513, R92642, R93418, R93468, R93700, R94462, R94463, R94793, R95110,

		R96330, R96329, R96675, R96943, R97000, R98195, R99857, H48277, H48366, H48451, H53119, H54247, H54246, H57144, H57217, H58791, H59276, H59324, H59614, H59654, H62873, H62997, H66302, H67109, H67468, H67594, H67634, H67646, H67685, H67891, H67935, H68007, H68476, H72996, H73208, H73882, H74057, H74076, H74196, H75522, H75366, H77704, H77705, H78593, H79262, H79373, H81287, H81343, H82036, H82218, H82313, H87010, H87011, H90552, H90551, H93198, H94403, N28269, N30773, N34862, N38975, N38989, N39317, N43935, N45164, N48122, N48136, N50666, N50756, N52570, N53559, N53589, N55006, N55026, N57654, N58258, N58340, N58627, N58738, N70218, N72552, N72649, N77216, N77511, N77635, N80637, W01074, W58701, W68231, W68232, W68700, W72561, W72580, W72399, W76223, W85725, W92304, W92318, W92144, W92354, AA004478, AA004551, AA009715, AA009825, AA024464, AA024465, AA025660, AA039523, AA039522, AA040081, AA040128, AA040033, AA040827, AA045744, AA053323, AA099152, AA099250
789555	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1810 of SEQ ID NO:119, b is an integer of 15 to 1824, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:119, and where b is greater than or equal to a + 14.	T85669, H62189, H62190, H73963, H73295, N74147, W04314, W23625, W35215, AA040573, AA040671
789631	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 592 of SEQ ID NO:120, b is an integer of 15 to 606, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:120, and where b is greater than or equal to a + 14.	
789779	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 824 of SEQ ID NO:121, b is an integer of 15 to 838, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:121, and where b is greater than or equal to a + 14.	N69694, AA151932
790387	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	H19654, H87102, H87749, N29354, N34298, N44187, N57052, W69612,

	sequence described by the general formula of a-b, where a is any integer between 1 to 642 of SEQ ID NO:122, b is an integer of 15 to 656, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:122, and where b is greater than or equal to a + 14.	W93844, W93865, AA027893, AA029638, AA058317, AA058495, AA179870, AA232827, AA233881, AA235809
790461	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1372 of SEQ ID NO:123, b is an integer of 15 to 1386, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:123, and where b is greater than or equal to a + 14.	R66275, R76171, R82537, AA054476, AA056199, AA127010, AA143025, AA151006, AA150976
790931	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 831 of SEQ ID NO:124, b is an integer of 15 to 845, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:124, and where b is greater than or equal to a + 14.	T92052, R10686, T84927, R21818, R22331, R22332, R22401, R23139, R23140, R23369, R32153, R32154, R63527, R63575, R68799, R68901, R80768, H12779, H12836, H56522, H56704, H94832, H96055, H96058, H96422, H96418, N26715, N27088, N31910, N32532, N33383, N34596, N42693, N42748, W32121, W37432, W44577, W44627, W51792, W61294, W65390, AA026773, AA026774
791176	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1642 of SEQ ID NO:125, b is an integer of 15 to 1656, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:125, and where b is greater than or equal to a + 14.	T51708, T51919, T69384, R50942, R73632, R73706, H28125, N22822, N78772
791983	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 823 of SEQ ID NO:126, b is an integer of 15 to 837, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:126, and where b is greater than or equal to a + 14.	
792539	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1203 of SEQ ID NO:127, b is an integer of 15 to 1217, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:127, and where b is greater than or equal to a + 14.	H53623, H53662, N23079, N69293, N89689, AA034518, AA035409, AA035410, AA046490, AA046762, AA085037, AA085105, AA134976, AA135078, AA459951, AA460040
792749	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1335 of SEQ ID NO:128, b is an integer of 15 to 1349, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:128, and where b is greater than or equal to a + 14.	R13058, R13951, R40011, R51765, R51766, R40011, R67629, R67630, H01808, H29310, H29403, R99196, H52742, H52788, H61636, H71767, H71768, N20919, N27779, N36030, N41741, N47900, N55480, N76967, W21551, W44410, W44331, W46458, W46528, W46810, W46928, W51766.

		W57869, W58140, W86456, N90422, AA029174, AA029253, AA031374, AA031375, AA062913, AA082549, AA133965, AA167773, AA166872, AA176295, AA176395, AA428235
792961	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2304 of SEQ ID NO:129, b is an integer of 15 to 2318, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:129, and where b is greater than or equal to a + 14.	
793206	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2135 of SEQ ID NO:130, b is an integer of 15 to 2149, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:130, and where b is greater than or equal to a + 14.	
793249	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1006 of SEQ ID NO:131, b is an integer of 15 to 1020, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:131, and where b is greater than or equal to a + 14.	T48358, T48359, T71001, T71063, T72193, T72972, T67531, T69528, T86709, T86804, T89854, T90890, T91159, T85694, T85895, T95466, T95467, R00007, R00008, R12353, R23932, R23933, R37279, R63973, R64080, R73825, R73826, R76905, R77073, R77445, R77538, R79797, R79808, R79894, R79908, H11925, H11926, H15192, H16754, H16862, H19737, H20072, H21725, H22675, H24523, H26125, H26391, H39766, H41271, H41373, H41374, H43544, H43545, H44881, H45180, H45181, R92671, R94833, H57801, H58122, H58123, H62248, H62337, H69587, H69586, H80840, H80930, H85462, H85747, H86829, H86902, H96591, H96708, H97829, H99614, N25266, N26147, N27161, N29792, N33452, N33767, N33906, N36535, N38816, N39177, N40101, N42935, N42425, N44530, N45252, N45445, N57801, N59012, N78685, N79046, N91819, N98480, W02726, W04566, W15191, W15596, W17335, W24253, W25723, W30937, W31253, W31429, W31674, W39685, W44989, W46619, W46654, W57768, W57804, W57841, W57622, W67135, W67136, W73878, W73364, W73441, W77815, W80810, W80903, W92682, W92512, W92513, W96375, W96526, AA001447, AA001482, AA021374, AA021375, AA037268, AA037489, AA037569, AA039708, AA040262, AA040417, AA057011,

		AA074646, AA074679, AA075303, AA088467, AA098947, AA100987, AA126026, AA126122, AA126778, AA128010, AA128034, AA136619, AA136750, AA143234, AA143291, AA143564, AA143565, AA146915, AA151446, AA151447, AA156218, AA157383, AA159151, AA173294, AA179768, AA180442, AA181155, AA181156, AA181722, AA186611, AA188254, AA190686, AA191758, AA191547, AA195441, AA223540, AA223587
793626	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2305 of SEQ ID NO:132, b is an integer of 15 to 2319, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:132, and where b is greater than or equal to a + 14.	
794417	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1359 of SEQ ID NO:133, b is an integer of 15 to 1373, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:133, and where b is greater than or equal to a + 14.	
795197	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1643 of SEQ ID NO:134, b is an integer of 15 to 1657, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:134, and where b is greater than or equal to a + 14.	
795251	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2346 of SEQ ID NO:135, b is an integer of 15 to 2360, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:135, and where b is greater than or equal to a + 14.	T89826, T74514, T89080, R24028, H03686, H97493, N54611, W94797, W94798, AA129537, AA190765, AA191357, AA256363, AA425151, AA429405
795752	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1028 of SEQ ID NO:136, b is an integer of 15 to 1042, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:136, and where b is greater than or equal to a + 14.	
796261	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1023 of SEQ ID	



	NO:137, b is an integer of 15 to 1037, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:137, and where b is greater than or equal to a + 14.	
796933	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1476 of SEQ ID NO:138, b is an integer of 15 to 1490, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:138, and where b is greater than or equal to a + 14.	
799424	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1670 of SEQ ID NO:139, b is an integer of 15 to 1684, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:139, and where b is greater than or equal to a + 14.	
799698	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 413 of SEQ ID NO:140, b is an integer of 15 to 427, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:140, and where b is greater than or equal to a + 14.	
800351	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 875 of SEQ ID NO:141, b is an integer of 15 to 889, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:141, and where b is greater than or equal to a + 14.	
800573	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1491 of SEQ ID NO:142, b is an integer of 15 to 1505, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:142, and where b is greater than or equal to a + 14.	
805815	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1221 of SEQ ID NO:143, b is an integer of 15 to 1235, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:143, and where b is greater than or equal to a + 14.	
806445	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1406 of SEQ ID NO:144, b is an integer of 15 to 1420, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:144, and where b is greater than or equal to a + 14.	
810309	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1905 of SEQ ID NO:145, b is an integer of 15 to 1919, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:145, and where b is greater than or equal to a + 14.	
811022	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1365 of SEQ ID NO:146, b is an integer of 15 to 1379, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:146, and where b is greater than or equal to a + 14.	
811023	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 500 of SEQ ID NO:147, b is an integer of 15 to 514, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:147, and where b is greater than or equal to a + 14.	
811143	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2044 of SEQ ID NO:148, b is an integer of 15 to 2058, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:148, and where b is greater than or equal to a + 14.	
811381	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1767 of SEQ ID NO:149, b is an integer of 15 to 1781, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:149, and where b is greater than or equal to a + 14.	
811595	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1695 of SEQ ID NO:150, b is an integer of 15 to 1709, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:150, and where b is greater than or equal to a + 14.	T51013, T51104, T54094, T54185, T68577, T68655, T90261, T90702, T92691, R34639, R49168, R51392, R49168, R84952, R84994, H84723, H84890, N29820, N42512, N64677, N67206, N73458, N80110, N92710, W02861, W20327, W23680, W76675, AA031294, AA062736, AA062781, AA070243, AA070244, AA084464, AA100714, AA100767, AA136726, AA136684, AA191613, AA223541, AA223589, AA252636
813000	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 908 of SEQ ID NO:151, b is an integer of 15 to 922, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:151, and where b is greater than or equal to a + 14.	
813288	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 621 of SEQ ID NO:152, b is an integer of 15 to 635, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:152, and where b is greater than or equal to a + 14.	
813431	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2314 of SEQ ID NO:153, b is an integer of 15 to 2328, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:153, and where b is greater than or equal to a + 14.	T94237, T89464, T89552, R09285, T78198, R14453, R15241, R15311, R21130, R33140, R33292, R40972, R46726, R42211, R40972, R46726, R66207, R67085, R73679, R73770, H12485, H19135, H22930, H24111, H26774, H26884, R89854, R89894, R92012, R92057, H53798, H61991, H61992, H64854, H65452, H73213, H74063, H79753, H79754, H80620, H80654, H81209, H81210, H84019, H84020, N35581, N68664, N73792, N91681, N92730, N99417, W20349, W46901, W52684, W60422, W61136, W61108, W61174, W68119, W73989, W79021, W79231, W80414, W80777, W80930, AA040315, AA045023, AA045024, AA045188, AA045352, AA181735, AA181799, AA223229, AA223428, AA464186, AA464780, AA428152, AA430305
813450	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1254 of SEQ ID NO:154, b is an integer of 15 to 1268, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:154, and where b is greater than or equal to a + 14.	T90954, T84401, T85262, R22109, R48652, R72000, R73453, H14261, H27403, H42017, H42018, H38149, H38150, H69302, H69397, N98775, AA148803, AA150212
813478	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4285 of SEQ ID NO:155, b is an integer of 15 to 4299, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:155, and where b is greater than or equal to a + 14.	
813505	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 992 of SEQ ID NO:156, b is an integer of 15 to 1006, where both a and b correspond to the positions of nucleotide	

	residues shown in SEQ ID NO:156, and where b is greater than or equal to a + 14.	
815552	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1672 of SEQ ID NO:157, b is an integer of 15 to 1686, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:157, and where b is greater than or equal to a + 14.	
815606	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4133 of SEQ ID NO:158, b is an integer of 15 to 4147, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:158, and where b is greater than or equal to a + 14.	T69152, T69213, T80080, T80327, R19043, R27520, R38534, R38898, R44031, R44031, R67769, H11493, H11852, H13644, H22161, H28042, H39529, H42500, H43488, N32678, N50022, N51861, N54126, N54677, W16972, W32896, W35293, W38598, N89624, N90277, AA027830, AA027892, AA035739, AA055806, AA069223, AA078890, AA078891, AA099437, AA099478, AA101431, AA112543, AA121794, AA129629, AA136251, AA143110, AA150576, AA157125, AA158242, AA158709, AA159976, AA160357, AA159491, AA160534, AA160629, AA165150, AA165151, AA164643, AA166799, AA169647, AA169822, AA173082, AA187009, AA224150, AA224303, AA224514, AA224513, AA224488, AA226779, AA227396, AA227518, AA232104, AA232580, AA256938, AA255494, AA429442
816048	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1228 of SEQ ID NO:159, b is an integer of 15 to 1242, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:159, and where b is greater than or equal to a + 14.	T54940, T59322, R35627, R46514, R48419, R48536, R48537, R48569, R48582, R48668, R48683, R49781, R49827, R53111, R53210, R66870, R67958, R69435, R69517, R70414, R71907, R71948, R72113, R72818, R73269, R75924, R75959, R79565, R79566, R80393, H25645, H26211, H29817, H29904, H39626, H39738, H39881, H40715, H42210, H42281, H42354, H42710, H43124, R83615, R86066, R92103, R92104, R96726, R96727, H54075, H54232, H54233, H62253, H62342, H80441, H80442, H91114, H97541, H99927, N27357, N27665, N93636, W19226, W19703, W25418, W25514, W44404, W63554, W78078, N89960, AA027093, AA027132, AA045021, AA045022, AA045721, AA045720, AA046247, AA046280, AA058624, AA074786, AA074787, AA082394, AA085101, AA085282, AA100996, AA127562, AA127729, AA127784, AA128372.

		AA134954, AA143611, AA148145, AA150570, AA161257, AA182028, AA188387, AA232423, AA464270, AA464381, AA421219, AA425804, AA428372
822978	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2215 of SEQ ID NO:160, b is an integer of 15 to 2229, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:160, and where b is greater than or equal to a + 14.	R28400, R82355, R82411, H01338, H01388, N24952, N33829, AA043471, AA043472, AA125807, AA128280, AA129405, AA133871, AA129367, AA133179, AA133312, AA131385, AA428408
823616	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1906 of SEQ ID NO:161, b is an integer of 15 to 1920, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:161, and where b is greater than or equal to a + 14.	
823981	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2605 of SEQ ID NO:162, b is an integer of 15 to 2619, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:162, and where b is greater than or equal to a + 14.	
824364	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1405 of SEQ ID NO:163, b is an integer of 15 to 1419, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:163, and where b is greater than or equal to a + 14.	R21933, H39733, N69879, AA027031, AA100964, AA157234, AA173338
824423	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3796 of SEQ ID NO:164, b is an integer of 15 to 3810, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:164, and where b is greater than or equal to a + 14.	
825279	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 803 of SEQ ID NO:165, b is an integer of 15 to 817, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:165, and where b is greater than or equal to a + 14.	R06729, R61520, R86829, H51131, N57993, W93696, AA423827
825442	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1564 of SEQ ID	

	NO:166, b is an integer of 15 to 1578, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:166, and where b is greater than or equal to a + 14.	
825548	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1680 of SEQ ID NO:167, b is an integer of 15 to 1694, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:167, and where b is greater than or equal to a + 14.	
825725	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1622 of SEQ ID NO:168, b is an integer of 15 to 1636, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:168, and where b is greater than or equal to a + 14.	
826639	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 653 of SEQ ID NO:169, b is an integer of 15 to 667, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:169, and where b is greater than or equal to a + 14.	
827079	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3584 of SEQ ID NO:170, b is an integer of 15 to 3598, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:170, and where b is greater than or equal to a + 14.	
827153	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 926 of SEQ ID NO:171, b is an integer of 15 to 940, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:171, and where b is greater than or equal to a + 14.	
827351	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1444 of SEQ ID NO:172, b is an integer of 15 to 1458, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:172, and where b is greater than or equal to a + 14.	R14710, H92769, H92882, AA195498, AA242878, AA242884, AA252152, AA251967, AA465181, AA465542, AA481105, AA481210, AA492206, AA732326
827503	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2695 of SEQ ID NO:173, b is an integer of 15 to 2709, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:173, and where b is greater than or equal to a + 14.	
827563	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 999 of SEQ ID NO:174, b is an integer of 15 to 1013, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:174, and where b is greater than or equal to a + 14.	
827565	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1683 of SEQ ID NO:175, b is an integer of 15 to 1697, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:175, and where b is greater than or equal to a + 14.	
827893	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1395 of SEQ ID NO:176, b is an integer of 15 to 1409, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:176, and where b is greater than or equal to a + 14.	
828072	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1489 of SEQ ID NO:177, b is an integer of 15 to 1503, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:177, and where b is greater than or equal to a + 14.	R20502, R45322, R45322, H29062, H29165, N36388, N39601, AA043930, AA044003, AA115568, AA115087, AA232982, AA234020, AA251431, AA251432, AA459761, AA768137, AA830696, AA918618, AA977409
828228	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1364 of SEQ ID NO:178, b is an integer of 15 to 1378, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:178, and where b is greater than or equal to a + 14.	T76992, T83862, R37649, R68086, R68125, H05325, H05379, H11520, H60866, N27826, N59149, N71661, AA004459, AA004512, AA026983, AA031653, AA045803, AA045870, AA127220, AA126199, AA129772, AA133788, AA131742, AA166788, AA216416, AA229513, AA469120, AA469189, AA503687, AA516488, AA522741, AA542827, AA614664, AA847108, AA876618, AA886579, AA887825, AA888263, AA888262, AA934459, N31217, D79619, N55800, AA026982, AA031743
828241	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2237 of SEQ ID NO:179, b is an integer of 15 to 2251, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:179, and where b is greater than or equal to a + 14.	R09047, H71262, N28995, W07805, W89157, AA007537, AA203119

828287	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 986 of SEQ ID NO:180, b is an integer of 15 to 1000, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:180, and where b is greater than or equal to a + 14.</p>	<p>R00158, R34699, R34806, R55812, R55897, H02931, H04234, H38596, H38841, H38877, R84345, R84762, R85507, H51401, N22910, N31298, N36027, N64463, N70710, N80820, N94519, N99846, W15234, W15579, W15620, W23968, W24669, W30920, W31655, W37399, W37400, W39182, W45512, W44342, W45653, W44569, W44608, W47630, W47631, W52183, W52421, W57603, W58189, W58466, W60614, W73715, W78044, W90451, W90258, W92042, W91902, AA012954, AA013060, AA013459, AA013460, AA018132, AA018050, AA021226, AA021359, AA021556, AA021640, AA033802, AA040580, AA040552, AA047883, AA054092, AA055181, AA055893, AA082252, AA082502, AA099128, AA099165, AA100988, AA131285, AA136296, AA136178, AA151469, AA151470, AA156144, AA158033, AA158325, AA164422, AA164402, AA167105, AA182609, AA182541, AA187289, AA187406, AA523678, AA582094, AA570257, AA573999, AA574305, AA579097, AA661683, AA662869, AA664665, AA736798, AA770689, AA865267, AA902336, AA923648, AA933570, AA939196, AA988468, A1000226, A1089764, D79059, N84733, W73650, N86290, N88454, C04677, C06015, AA033803, R29541, AA089664, AA089996, C17096, C17255, C19033, AA093458</p>
828364	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1415 of SEQ ID NO:181, b is an integer of 15 to 1429, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:181, and where b is greater than or equal to a + 14.</p>	<p>R55711, R55921, R68105, R68149, R72479, R72941, N70480, W72759</p>
828371	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2711 of SEQ ID NO:182, b is an integer of 15 to 2725, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:182, and where b is greater than or equal to a + 14.</p>	<p>T62048, T62112, T91683, T92364, T92416, T93284, N49690, N49793, N64329, N80813, W15549, W15404, W31643, W53039, W92220, W92342, AA055521, AA055520, AA149883, AA150063, AA148836, AA150436</p>
828403	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1737 of SEQ ID NO:183, b is an integer of 15 to 1751, where both a</p>	<p>AA485171, AA515218, AA603721, AA612760, AA838541, AA970526, C18512</p>



	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:183, and where b is greater than or equal to a + 14.	
828501	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2186 of SEQ ID NO:184, b is an integer of 15 to 2200, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:184, and where b is greater than or equal to a + 14.	H19145, N75547, AA044653, AA128979, AA159576, AA423963, AA523306, H62675, H97872, AA610503, AA010941, AA011327, AA043344
828520	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1973 of SEQ ID NO:185, b is an integer of 15 to 1987, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:185, and where b is greater than or equal to a + 14.	H70392, N30525, N30537, AA010769, AA463668, AA927343, AA091744
828527	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1723 of SEQ ID NO:186, b is an integer of 15 to 1737, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:186, and where b is greater than or equal to a + 14.	T39306, T40514, R08857, R08964, R00734, R00735, R13824, R20172, R37684, R44959, R44959, H05503, H17017, H17018, H54295, H54372, H54503, H67654, H67974, H87993, N33311, N37017, N44843, N55182, N75469, N75534, N77241, N93004, W05278, W05327, W45465, W88760, W88865, AA010623, AA010624, AA234956, AA235130, AA424457, AA282705, AA283023, AA283109, AA481529, AA481595, AA490727, AA491218, AA554176, AA614573, AA665370, AA687964, AA736921, AA765107, AA767430, AA809487, AA865595, N88052
828538	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1118 of SEQ ID NO:187, b is an integer of 15 to 1132, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:187, and where b is greater than or equal to a + 14.	
828541	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1253 of SEQ ID NO:188, b is an integer of 15 to 1267, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:188, and where b is greater than or equal to a + 14.	
828549	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3773 of SEQ ID NO:189, b is an integer of 15 to 3787, where both a and b correspond to the positions of nucleotide	

	residues shown in SEQ ID NO:189, and where b is greater than or equal to a + 14.	
828562	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 540 of SEQ ID NO:190, b is an integer of 15 to 554, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:190, and where b is greater than or equal to a + 14.	
828576	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 860 of SEQ ID NO:191, b is an integer of 15 to 874, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:191, and where b is greater than or equal to a + 14.	
828602	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2089 of SEQ ID NO:192, b is an integer of 15 to 2103, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:192, and where b is greater than or equal to a + 14.	
828628	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1303 of SEQ ID NO:193, b is an integer of 15 to 1317, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:193, and where b is greater than or equal to a + 14.	
828667	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1238 of SEQ ID NO:194, b is an integer of 15 to 1252, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:194, and where b is greater than or equal to a + 14.	
828684	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1674 of SEQ ID NO:195, b is an integer of 15 to 1688, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:195, and where b is greater than or equal to a + 14.	R11676, R12284, N68621, N71575, N99448, W02008, W58632, W74361, W76341, W78934, W85701, AA070898, AA070787, AA102636, AA102661, AA102678, AA190864, AA190957, AA197279, AA251577, AA464994, AA421724, AA470741, AA505341, AA506137, AA583780, AA579967, AA714136, AA743352, AA747903, AA814422, AA826755, AA836633, AA837944, AA936844, A1004160, C00265, AA641021
828727	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	R35925, R35954, R49443, R49468, R49443, R49468, N74960, AA083678, AA086366, AA100585, AA111863,

	where a is any integer between 1 to 742 of SEQ ID NO:196, b is an integer of 15 to 756, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:196, and where b is greater than or equal to a + 14.	AA156573, AA159175, AA192611, AA195925, AA195976, AA418567, AA418582
828734	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1457 of SEQ ID NO:197, b is an integer of 15 to 1471, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:197, and where b is greater than or equal to a + 14.	
828750	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 678 of SEQ ID NO:198, b is an integer of 15 to 692, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:198, and where b is greater than or equal to a + 14.	
828842	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1559 of SEQ ID NO:199, b is an integer of 15 to 1573, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:199, and where b is greater than or equal to a + 14.	R31695, R31737, R86919, R86763, H66952, N30849, N41376, N95538, W03782, W24227, N90171, AA020001, AA046039, AA046149, AA099753, AA489705, AA552582, AA580818, AA584291, AA730113, AA910268
828843	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2728 of SEQ ID NO:200, b is an integer of 15 to 2742, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:200, and where b is greater than or equal to a + 14.	T57326, T57387, T94838, T94837, T94879, T94925, T74456, R11995, R15234, R19543, R21728, R36670, R39752, R39834, R40808, R40808, R43895, R70936, R70988, R74057, R74152, R79967, R80062, H02983, H04277, H08966, H09537, H25298, H25343, H25449, H25495, H29439, H29438, H29887, H29987, R86318, H65676, H87966, H88350, H97859, N20316, N26629, N27590, N39724, N52972, W39188, W45099, W45149, N90248, AA004834, AA033776, AA039900, AA039901, AA041524, AA044928, AA082729, AA085742, AA112974, AA128343, AA133157, AA171997, AA418609, AA418664, AA421626, AA430065, AA230107, AA230108, AA513630, AA521134, AA622056, AA635868, AA639882, AA714929, AA715480, AA715556, AA729814, AA731061, AA811597, AA830222, AA873240, AA886078, AA886270, AA907208, AA932201, AA977447, AA989000, D81476, N56281, C21262, AA089709
828851	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 1403 of SEQ ID NO:201, b is an integer of 15 to 1417, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:201, and where b is greater than or equal to a + 14.	
828856	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1498 of SEQ ID NO:202, b is an integer of 15 to 1512, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:202, and where b is greater than or equal to a + 14.	
828862	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 405 of SEQ ID NO:203, b is an integer of 15 to 419, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:203, and where b is greater than or equal to a + 14.	AA021223
828870	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2819 of SEQ ID NO:204, b is an integer of 15 to 2833, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:204, and where b is greater than or equal to a + 14.	
828873	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 5816 of SEQ ID NO:205, b is an integer of 15 to 5830, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:205, and where b is greater than or equal to a + 14.	
828892	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 741 of SEQ ID NO:206, b is an integer of 15 to 755, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:206, and where b is greater than or equal to a + 14.	R54649, W46198
828893	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1982 of SEQ ID NO:207, b is an integer of 15 to 1996, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:207, and where b is greater than or equal to a + 14.	
828897	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	

	where a is any integer between 1 to 1654 of SEQ ID NO:208, b is an integer of 15 to 1668, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:208, and where b is greater than or equal to a + 14.	
828910	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2236 of SEQ ID NO:209, b is an integer of 15 to 2250, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:209, and where b is greater than or equal to a + 14.	T91595, T65436, T65518, T70584, T70847, T75377, R09159, R09261, R09950, T96365, T96446, R12590, R13068, R18120, R21193, R22430, R22480, R22810, R25025, R26742, R26976, R32026, R32079, R33017, R33904, R36588, R39200, R40499, R45972, R40499, R45972, R56330, R64494, R65591, R67446, R70974, R74477, R74579, R77932, R78301, R78497, R78547, R80142, R80143, H00643, H00729, H03024, H04306, H06614, H07124, H09643, H09677, H28706, H28835, H42802, H47310, R92010, H65658, H65657, H67068, H68151, H71685, H72248, H72786, H72785, H73342, H75583, H75514, H77433, H98557, N20087, N22979, N23822, N28617, N29593, N32509, N33262, N40705, N42724, N44752, N45195, N57760, N58105, N59101, N59726, N64423, N66868, N71993, N73995, N99375, W01801, W02025, W19280, W19667, W19930, W25451, W25645, W31475, W31938, W32153, W32005, W37711, W37710, W46758, W46905, W49818, W56089, W57771, W57844, W61375, W61376, W60415, W60416, W61142, W61190, W67942, W67941, W74649, W84332, W84393, W86146, W94323, AA016041, AA015933, AA022593, AA022594, AA030003, AA043309, AA069392, AA069393, AA069775, AA069812, AA102392, AA112674, AA112673, AA135337, AA135336, AA143448, AA152405, AA152459, AA149804, AA149829, AA149849, AA149856, AA156559, AA157731, AA159045, AA160734, AA173662, AA173661, AA235812, AA242974, AA243081, AA242998, AA252146, AA460003, AA460542, AA428205, AA429142, AA285041, AA283758, AA283993, AA480305, AA506566, AA524852, AA631324, AA575859, AA658502, AA766717, AA808234, AA837876, AA866075, AA877425, AA879058, AA886608, AA902179, AA904000, AA928667, AA937136, AA962263, AA995987, A1024986, W25995, W26229, W27231, W26246, W28106,

		W28807, W48809, C01974, AA640952, C14885, C15137
828927	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 824 of SEQ ID NO:210, b is an integer of 15 to 838, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:210, and where b is greater than or equal to a + 14.	
828932	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1199 of SEQ ID NO:211, b is an integer of 15 to 1213, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:211, and where b is greater than or equal to a + 14.	T50679, T51209, T78077, R42605, R48768, R42605, R91277, H61157, W38635, W44738, W46899, W80700, AA017684, AA017707, AA018069, AA019662, AA040254, AA053989, AA054041, AA070137, AA070138, AA074661, AA086354, AA158859, AA223111, AA224210, AA224315, AA232155, AA471047, AA588037, AA720832, AA872503
828933	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 955 of SEQ ID NO:212, b is an integer of 15 to 969, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:212, and where b is greater than or equal to a + 14.	
828941	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1680 of SEQ ID NO:213, b is an integer of 15 to 1694, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:213, and where b is greater than or equal to a + 14.	
828957	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1196 of SEQ ID NO:214, b is an integer of 15 to 1210, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:214, and where b is greater than or equal to a + 14.	R09987, R16645, R16734, R81727, H58067, H58066, H59815, H59816, H64860, H65458, N70923, W81647, W81187, AA052891, AA053046, AA251319, AA251723, AA262259, AA262870, AA463359, AA463865, AA417918, AA418169, AA480203, AA521273, AA836429, AA858135, AA888105, AA917914, AA937591, AA947712, AA961752, AA973797, A1085881
828963	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1762 of SEQ ID NO:215, b is an integer of 15 to 1776, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:215, and where b is greater than or equal to a + 14.	
828964	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 1404 of SEQ ID NO:216, b is an integer of 15 to 1418, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:216, and where b is greater than or equal to a + 14.	
828966	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2186 of SEQ ID NO:217, b is an integer of 15 to 2200, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:217, and where b is greater than or equal to a + 14.	T57322, T57383, R07432, R07433, R24183, R37889, R64196, R64212, H10798, H16281, H96182, N24864, N31801, N31897, N51466, N53607, N71323, N71374, N71696, N78973, N91801, N99595, N99806, W17338, W38617, W44695, W52815, W93325, W95029, AA027074, AA031625, AA031706, AA034522, AA101476, AA101477, AA156927, AA157179, AA173234, AA196758, AA506558, AA541561, AA552220, AA573198, AA687807, AA732065, AA769029, AA804914, AA858375, AA931935, AA995830, A1075078, A1075079, AA641307
828967	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1839 of SEQ ID NO:218, b is an integer of 15 to 1853, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:218, and where b is greater than or equal to a + 14.	T86194, T99270, R00981, R21065, R28076, R28291, R46245, R46245, R61751, R61752, H20415, H41325, H46347, H46354, W01107, W96450, W96548, AA082920, AA192528, AA494252, AA507548, AA604189, AA604361, AA614008, AA622126, AA573865, AA578191, AA568157, AA780392, AA812241, AA830010, AA836096, AA876742, C21216
828977	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1079 of SEQ ID NO:219, b is an integer of 15 to 1093, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:219, and where b is greater than or equal to a + 14.	T54853, T55018, T61617, T61701, T71718, T71787, R43855, R43855, H79047, W23509, W78022, AA028959, AA028960, AA035641, AA035749, AA040562, AA042827, AA044641, AA150059, AA459301, AA459532, AA419054, AA532924, AA603462, AA573839, AA863332, AA877269, A1016670, A1083871, A1085531
828978	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2141 of SEQ ID NO:220, b is an integer of 15 to 2155, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:220, and where b is greater than or equal to a + 14.	
828979	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1250 of SEQ ID NO:221, b is an integer of 15 to 1264, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:221, and where b is greater than or equal to a + 14.	

829001	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2071 of SEQ ID NO:222, b is an integer of 15 to 2085, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:222, and where b is greater than or equal to a + 14.	
829003	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2907 of SEQ ID NO:223, b is an integer of 15 to 2921, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:223, and where b is greater than or equal to a + 14.	T56900, T56901, T57894, T57976, T58709, T83854, T83994, T83995, T85283, T85493, T85938, T98545, T98546, R23866, R51491, R51492, R70815, H06524, H06579, H21400, H22212, H26306, H26465, H40800, H42803, H44004, H45104, H45577, R84544, R85933, R95902, R98186, R98187, R99129, H51499, H62734, H62818, H67266, H67280, H67971, H72027, H72028, H86532, H86617, H97834, N22060, N22322, N22927, N23444, N23843, N27358, N27627, N31797, N53099, N55505, N55527, N62760, N76278, N76994, N81072, N99969, W07363, W15385, W30908, W32209, W32266, W37612, W39341, W45721, W44369, W60688, W60728, W74331, W79764, W79508, AA010902, AA011007, AA013382, AA013383, AA017180, AA018376, AA021435, AA128552, AA128295, AA161229, AA160487, AA236095, AA259037, AA458538, AA428449, AA491943, AA492101, AA501898, AA505736, AA551906, AA552335, AA554636, AA564579, AA588897, AA593936, AA595710, AA610733, AA612690, AA569349, AA570259, AA570263, AA573856, AA579746, AA658849, AA721609, AA743280, AA743326, AA808972, AA831035, AA836900, AA887420, AA887859, AA970292, AA994943, AA994947, A1014465, F19724, N36447, D78889, N75198, W37467, W79607, C03008, C04753
829016	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4381 of SEQ ID NO:224, b is an integer of 15 to 4395, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:224, and where b is greater than or equal to a + 14.	
829027	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3021 of SEQ ID	



	NO:225, b is an integer of 15 to 3035, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:225, and where b is greater than or equal to a + 14.	
829028	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1497 of SEQ ID NO:226, b is an integer of 15 to 1511, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:226, and where b is greater than or equal to a + 14.	
829031	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2225 of SEQ ID NO:227, b is an integer of 15 to 2239, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:227, and where b is greater than or equal to a + 14.	T52373, T52446, T65540, T91789, R10959, T84998, R06717, R28502, R48288, R48390, R48442, R54616, R54879, R55311, R55316, R55413, R55418, R72602, R72669, R72946, H15595, H27333, H41543, H37781, R84976, R85050, R88513, R88514, H49052, H49116, H96219, H96754, H97979, N23664, N25056, N26150, N32997, N51857, N54122, W65281, W65277, W72409, W76488, W92510, N91031, AA045475, AA056943, AA057662, AA057806, AA126670, AA127032, AA136891, AA137001, AA158595, AA158989, AA279342, AA604130, AA604929, AA631863, C01812
829034	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2332 of SEQ ID NO:228, b is an integer of 15 to 2346, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:228, and where b is greater than or equal to a + 14.	
829036	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2232 of SEQ ID NO:229, b is an integer of 15 to 2246, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:229, and where b is greater than or equal to a + 14.	W19899, W56172, N91246, AA053015, AA258943, AA508101, AA557537, AA744258, C06034, AA053503
829049	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1988 of SEQ ID NO:230, b is an integer of 15 to 2002, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:230, and where b is greater than or equal to a + 14.	
829073	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 980 of SEQ ID	N71827, W07562, W79070, W94296, AA026190, AA215725, AA279902, AA832099

	NO:231, b is an integer of 15 to 994, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:231, and where b is greater than or equal to a + 14.	
829075	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 472 of SEQ ID NO:232, b is an integer of 15 to 486, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:232, and where b is greater than or equal to a + 14.	
829076	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2067 of SEQ ID NO:233, b is an integer of 15 to 2081, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:233, and where b is greater than or equal to a + 14.	
829080	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 502 of SEQ ID NO:234, b is an integer of 15 to 516, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:234, and where b is greater than or equal to a + 14.	
829087	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1115 of SEQ ID NO:235, b is an integer of 15 to 1129, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:235, and where b is greater than or equal to a + 14.	
829092	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1031 of SEQ ID NO:236, b is an integer of 15 to 1045, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:236, and where b is greater than or equal to a + 14.	
829095	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 676 of SEQ ID NO:237, b is an integer of 15 to 690, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:237, and where b is greater than or equal to a + 14.	T98739, T98740, R53404, R72484, H09731, H16600, H21795, H25680, N79773, N93472, AA812105, AA826523, AA954170, A1084914
829096	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1859 of SEQ ID NO:238, b is an integer of 15 to 1873, where both a	T40001, T40939, R53257, R62981, R62980, R63036, H15127, H15187, H24078, H24188, H81472, H88927, H88927, H99390, N32032, N47835, N66666, N98950, AA022842.

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:238, and where b is greater than or equal to a + 14.	AA022965, AA024917, AA024918, AA035721, AA062907, AA102646, AA101299, AA223395, AA419511, AA421963, AA421964, AA524699, AA532380, AA614315, AA570194, AA742712, AA865440, AA887301, AA987486, AA988144, AA091175
829118	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 891 of SEQ ID NO:239, b is an integer of 15 to 905, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:239, and where b is greater than or equal to a + 14.	
829152	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1470 of SEQ ID NO:240, b is an integer of 15 to 1484, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:240, and where b is greater than or equal to a + 14.	T72498, T73568, T74363, T86984, R10378, R10477, T85969, R05924, R06022, H58205, H65999, H66000, N68870, N92084, N92944, AA188651, AA188754, N72345
829160	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1507 of SEQ ID NO:241, b is an integer of 15 to 1521, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:241, and where b is greater than or equal to a + 14.	R19077, R24890, R70937, R70989, R75822, R75823, H13581, R88030, H97197, H97205, H97610, H97622, H97640, H99011, N22163, N22211, N25706, N31618, N31627, N34096, N35586, N57066, N57078, N57083, N63961, N71248, N71530, N79638, W23686, W25345, W80523, W80524, AA027117, AA044025, AA044347, AA056543, AA056646, AA082122, AA120870, AA120871, AA129173, AA129197, AA173547, AA173713, AA190689, AA252595, AA258865, AA259007, AA576323, AA768606, N55993, N84224
829163	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1130 of SEQ ID NO:242, b is an integer of 15 to 1144, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:242, and where b is greater than or equal to a + 14.	R27150, H50951, N39917, N41848, N41877
829176	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 920 of SEQ ID NO:243, b is an integer of 15 to 934, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:243, and where b is greater than or equal to a + 14.	T46875, T53785, T62036, T73807, R11065, R11122, T84299, T85183, R01714, R02656, R02737, R02738, H41134, H64904, H79712, H79713, N68598, N71315, N71366, N99798, W01984
829204	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b.	R50489, R50573, R74498, R74499, AA234014, AA535362, AA554207, AA847239

	where a is any integer between 1 to 901 of SEQ ID NO:244, b is an integer of 15 to 915, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:244, and where b is greater than or equal to a + 14.	
829207	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1262 of SEQ ID NO:245, b is an integer of 15 to 1276, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:245, and where b is greater than or equal to a + 14.	
829228	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3352 of SEQ ID NO:246, b is an integer of 15 to 3366, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:246, and where b is greater than or equal to a + 14.	T40764, T49773, T49774, H05098, H49148, H51985, H52105, N36154, N51490, N52526, N53635, AA054314, AA074167, AA152473, AA152472, AA188950, AA278366, AA281330, AA468930, AA469004, AA482010, AA542938, AA554491, AA565215, AA579406, AA741363, AA807139, AA832066, AA836995, AA876036, AA995854
829252	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2134 of SEQ ID NO:247, b is an integer of 15 to 2148, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:247, and where b is greater than or equal to a + 14.	
829254	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2211 of SEQ ID NO:248, b is an integer of 15 to 2225, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:248, and where b is greater than or equal to a + 14.	
829269	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1190 of SEQ ID NO:249, b is an integer of 15 to 1204, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:249, and where b is greater than or equal to a + 14.	
829277	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1300 of SEQ ID NO:250, b is an integer of 15 to 1314, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:250, and where b is greater than or equal to a + 14.	
829290	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 1145 of SEQ ID NO:251, b is an integer of 15 to 1159, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:251, and where b is greater than or equal to a + 14.	
829294	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2474 of SEQ ID NO:252, b is an integer of 15 to 2488, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:252, and where b is greater than or equal to a + 14.	
829299	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1540 of SEQ ID NO:253, b is an integer of 15 to 1554, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:253, and where b is greater than or equal to a + 14.	T82894, H25618, N48726, W52191, AA037331, AA223798, AA224330, AA635842, AA748884, AA826495, AA864458, AA903250, AA908466, AA931986, D81481, N56293, C02225
829308	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1492 of SEQ ID NO:254, b is an integer of 15 to 1506, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:254, and where b is greater than or equal to a + 14.	R13979, R17378, R40039, R42616, R42616, R40039, R56257, R56346, H05467, H07018, R86778, H99527, H99526, H99763, N24571, N25539, N25635, N28490, N30121, N34013, N34136, N34233, N35730, N49189, N50244, N92737, W20356, AA255602, AA262707, AA255576, AA262183, AA279758, AA570002, AA572777, AA721016, AA814424, AA864521, AA902860, AA948310, AI024777, AI056401
829349	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 640 of SEQ ID NO:255, b is an integer of 15 to 654, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:255, and where b is greater than or equal to a + 14.	T39288, T47082, T50451, T50586, T59000, T59073, T59535, T59586, T63704, T63861, T69920, T69974, T71240, T72474, T72943, T90268, T90710, T83786, T95048, R31368, R33435, R34369, R34489, R73911, R80467, R80667, R94351, R97310, R97345, H57329, H57376, H62783, H64845, H65444, H82981, H83214, H93955, H93956, N29780, N42940, N45379, N57200, N80805, W06876, W15396, W47162, W47283, W52164, W52024, W52758, W73045, W73275, W73604, W73643, W86783, W87274, AA009954, AA010849, AA011288, AA022621, AA022757, AA025805, AA025929, AA025968, AA046835, AA054475, AA058513, AA063327, AA075215, AA075451, AA088739, AA088740, AA099371, AA099457, AA112397, AA113053, AA121065, AA121066, AA132025, AA132147, AA132237, AA132357, AA146935,

		AA147721, AA147756, AA147602, AA148113, AA156063, AA157120, AA157223, AA157610, AA165107, AA164710, AA173741, AA173185, AA187331, AA187332, AA187293, AA187393, AA187741, AA188097, AA187033, AA188455, AA188457, AA188467, AA216356, AA228668, AA229001, AA228993, AA229108, AA397406, AA482922, AA483319, AA483431, AA491567, AA501502, AA507889, AA508445, AA513947, AA515053, AA522563, AA523140, AA525478, AA524922, AA526106, AA534088, AA535846, AA548219, AA552477, AA555012, AA558315, AA564882, AA565458, F16817, F16991, F17527, AA582793, AA587225, AA588487, AA595626, AA602055, AA602240, AA603392, AA631634, AA638971, AA639988, AA640535, AA576051, AA576894, AA566049, AA655021, AA659001, AA661609, AA662354, AA664631, AA664721, AA664980, AA665338, AA688035, AA714993, AA715012, AA720861, AA730373, AA730633, AA742678, AA742934, AA746812, AA747153, AA747192, AA747959, AA808437, AA836880, AA837645, AA838637, AA872341, AA876822, AA922665, AA961515, AA968734, AA970649, AA978219, AA988051, AA988404, AA991418, AA994111, A1002489, A1053409, A1053609, A1053760, A1082351, A1083631, N83854, N83948, N85971, N86260, N86628, N87758, AA641679, AA642097, AA642839, C20758, AA092159, AA092465, AA094493
829354	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1978 of SEQ ID NO:256, b is an integer of 15 to 1992, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:256, and where b is greater than or equal to a + 14.</p>	
829388	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2259 of SEQ ID NO:257, b is an integer of 15 to 2273, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:257, and where b is greater than or equal to a + 14.</p>	
829540	<p>Preferably excluded from the present invention are</p>	N26408, N28830, N28838, N31522.

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1490 of SEQ ID NO:258, b is an integer of 15 to 1504, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:258, and where b is greater than or equal to a + 14.	W15157, W81560, W81561, AA126749, AA126756, AA126772, AA187148
829626	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1778 of SEQ ID NO:259, b is an integer of 15 to 1792, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:259, and where b is greater than or equal to a + 14.	
829730	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2034 of SEQ ID NO:260, b is an integer of 15 to 2048, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:260, and where b is greater than or equal to a + 14.	
829892	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1268 of SEQ ID NO:261, b is an integer of 15 to 1282, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:261, and where b is greater than or equal to a + 14.	R84306, N99830, N90467, AA113938, AA192541, AA243317, L44546, AA713588
829933	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 585 of SEQ ID NO:262, b is an integer of 15 to 599, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:262, and where b is greater than or equal to a + 14.	AA121059, AA429187
829938	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1247 of SEQ ID NO:263, b is an integer of 15 to 1261, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:263, and where b is greater than or equal to a + 14.	AA001837, AA142857, AA235114, AA235222, AA614412, AA687460, AA857702, AA857893, AA962131, AA962521
829969	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1006 of SEQ ID NO:264, b is an integer of 15 to 1020, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:264, and where b is greater than or equal to a + 14.	R22931, R23036, H09755, H47088, N38971, N38985, N57545, AA075344, AA075597, AA136299, AA136180, AA279124, AA279243, AA279928, AA279929, AA909786, A1000293, N48117, N48131
829982	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	H40097, N80803, N93871, W07650, W15482, W40363, W42635, W45238,

	sequence described by the general formula of a-b, where a is any integer between 1 to 557 of SEQ ID NO:265, b is an integer of 15 to 571, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:265, and where b is greater than or equal to a + 14.	W67482, W67483, W70331, W72456, W73235, W73290, W76515, W78220, AA040927, AA040928, AA074829, AA075095, AA083686, AA166708, AA167049, AA228843, AA468686, AA469044, AA505509, AA548788, AA564157, AA595572, AA622149, AA633298, AA576799, AA746697, AA807946, AA873193, AA903706, AA919114, AA932502, AA938506, AA974058, AA977996, A1000750, N85073, N86741, N87037, N88197, N88746, AA090569
830007	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1336 of SEQ ID NO:266, b is an integer of 15 to 1350, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:266, and where b is greater than or equal to a + 14.	
830019	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1305 of SEQ ID NO:267, b is an integer of 15 to 1319, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:267, and where b is greater than or equal to a + 14.	T61424, T53868, T61391, T63785, R23153, R23154, R23905, R64468, R65575, R69390, R69523, R79153, R79154, H14532, H14533, H47318, H47402, H53647, H61347, H93017, H94242, N29789, N42932, W57927, W58148, W67701, W68160, W74342, W81702, W81703, W94692, W95218, W95440, W95785, AA043712, AA056570, AA114073, AA133633, AA133634, AA151774, AA149729, AA149782, AA149795, AA425861, AA425990, AA428095, AA428642, AA494401, AA515475, AA523534, AA548827, AA552032, AA564916, F16977, AA593645, AA613557, AA617694, AA618542, AA576565, AA576574, AA746168, AA766359, AA833956, AA837906, AA857421, AA857877, AA903383, AA903849, AA903888, AA916517, AA922889, AA962544, AA970534, AA974964, AA975402, AA976089, AA983583, AA992448, F18477, C04429, C17306
830073	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3680 of SEQ ID NO:268, b is an integer of 15 to 3694, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:268, and where b is greater than or equal to a + 14.	T93694, T96159, H04182, H04181, H15428, H48586, N74976, W05676, W44928, AA085826, AA085971, AA126446, AA425304, AA425408, AA280817, AA280995, AA287270, AA287417, AA668788, AA836455, AA977754
830130	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1228 of SEQ ID	



	NO:269, b is an integer of 15 to 1242, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:269, and where b is greater than or equal to a + 14.	
830134	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2043 of SEQ ID NO:270, b is an integer of 15 to 2057, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:270, and where b is greater than or equal to a + 14.	
830135	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 946 of SEQ ID NO:271, b is an integer of 15 to 960, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:271, and where b is greater than or equal to a + 14.	
830148	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1153 of SEQ ID NO:272, b is an integer of 15 to 1167, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:272, and where b is greater than or equal to a + 14.	R15244, R31943, R31992, H06853, H06894, H13355, H30882, R84410, R84411, R94120, H53381, H97695, H99925, N46996, N69023, N77897, W00690, W19694, W38937, W74721, W74795, N89822, N89950, AA009490, AA009904, AA031349, AA031350, AA035629, AA035719, AA046140, AA062845, AA062905, AA079564, AA079636, AA116062, AA116046, AA126968, AA148568, AA159591, AA160429, AA161272, AA161273, AA160576, AA179774, AA180491, AA179635, AA182631, AA182727, AA179634, AA192371, AA192282, AA199831, AA251312, AA256883, AA255477, AA430121, AA533720, AA551694, AA552307, AA552661, AA582138, AA586611, AA587906, AA594387, AA602977, AA605299, AA633388, AA573941, AA574038, AA579715, AA687647, AA741352, AA838339, AA857603, AA858082, AA866081, AA865003, AA875861, AA910672, AA927563, A1076918, W21962
830149	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2757 of SEQ ID NO:273, b is an integer of 15 to 2771, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:273, and where b is greater than or equal to a + 14.	R60249, R60762, R63751, R67526, H95029, H95095, N59347, N77158, W19778, AA047615, AA047555, AA047687, AA047738, AA056453, AA070880, AA112293, AA113105, AA112550, AA112614, AA158015, AA158228, AA160995, AA160996, AA190555, AA191131, AA224574, AA227422, AA255563, AA255586, AA418477, AA424689, AA470392, AA515485, AA515507, AA583475.

		AA588210, AA602533, AA573902, AA568354, AA746111, AA766146, AA804893, N83302
830154	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1875 of SEQ ID NO:274, b is an integer of 15 to 1889, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:274, and where b is greater than or equal to a + 14.	
830183	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 590 of SEQ ID NO:275, b is an integer of 15 to 604, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:275, and where b is greater than or equal to a + 14.	
830194	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1367 of SEQ ID NO:276, b is an integer of 15 to 1381, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:276, and where b is greater than or equal to a + 14.	T51023, T51115, T52795, T53595, T56300, T56767, T59691, T59827, T59904, T63354, T72200, T72269, T92900, T92990, R07165, R07217, R44334, R49609, R44334, R49609, H11106, H20800, H22618, H42472, H43453, H50320, H50321, H69947, N20118, N21306, N26128, N63140, N67225, N67232, W45407, W56419, W56420, W72419, W76279, W94626, W94710, AA029459, AA029524, AA034511, AA035053, AA035563, AA039819, AA041465, AA053002, AA055974, AA056002, AA070356, AA070320, AA074029, AA074039, AA074189, AA074336, AA075645, AA075646, AA076380, AA084435, AA084465, AA084453, AA085290, AA086454, AA099172, AA101922, AA101959, AA099618, AA102011, AA112794, AA126226, AA126304, AA128510, AA129955, AA133875, AA128443, AA133328, AA133403, AA134003, AA130990, AA131028, AA132940, AA135158, AA135628, AA143273, AA146730, AA151853, AA155641, AA155696, AA155726, AA157967, AA158903, AA158902, AA158943, AA158944, AA159293, AA159526, AA161206, AA160558, AA160739, AA160740, AA165357, AA167787, AA169218, AA169512, AA169691, AA176365, AA179272, AA179388, AA180903, AA181001, AA181325, AA181508, AA182781, AA173899, AA187757, AA188120, AA186725, AA187070, AA187152, AA190896, AA199819, AA223210.

		AA223254, AA227038, AA232399, AA233288, AA243192, AA252285, AA492525, AA420611, AA420688, AA492171, AA492254, AA503950, AA507398, AA513704, AA513757, AA515944, AA525799, AA558212, AA563863, AA565107, F17110, AA582829, AA586678, AA603895, AA604163, AA568617, AA617883, AA622814, AA635987, AA569079, AA570078, AA570258, AA570419, AA573205, AA573965, AA574048, AA566065, AA748781, AA834135, AA837022, AA838454, AA838636, AA838049, AA838058, AA856831, AA909853, AA910298, AA927706, AA932101, AA937900, AA953604, AA969555, AA973234, AA978074, AA985430, AA985432, AA988742, AA994207, A1002611, A1014411, N84537, N85082, W22113, W22114, W22431, W22639, W23207, W23271, W29046, N88675, AA640915, AA092777
830207	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1135 of SEQ ID NO:277, b is an integer of 15 to 1149, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:277, and where b is greater than or equal to a + 14.	R51744, R88177, W05323, AA746479, AA761644, AA826038, W27619, AA642452
830242	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 797 of SEQ ID NO:278, b is an integer of 15 to 811, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:278, and where b is greater than or equal to a + 14.	
830328	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1246 of SEQ ID NO:279, b is an integer of 15 to 1260, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:279, and where b is greater than or equal to a + 14.	
830340	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1654 of SEQ ID NO:280, b is an integer of 15 to 1668, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:280, and where b is greater than or equal to a + 14.	
830341	Preferably excluded from the present invention are	T62985, T63236, T71911, T66677.

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2314 of SEQ ID NO:281, b is an integer of 15 to 2328, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:281, and where b is greater than or equal to a + 14.	T66678, T80777, T81178, R16218, R16219, R67281, H15642, H15643, R96139, R96356, H61487, H61952, H62021, H62022, H62510, H62577, H62887, H63016, H65659, H65660, H72388, H72834, H80906, H97768, N30162, N35776, N52509, N66853, W44421, AA004323, AA004410, AA025214, AA026003, AA040205, AA040849, AA079158, AA079159, AA137066, AA137080, AA137137, AA136971, AA193479, AA532656, AA602312, AA828635, AA872751, AA934418, D80729, C15337
830351	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 942 of SEQ ID NO:282, b is an integer of 15 to 956, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:282, and where b is greater than or equal to a + 14.	
830358	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1388 of SEQ ID NO:283, b is an integer of 15 to 1402, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:283, and where b is greater than or equal to a + 14.	
830390	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 661 of SEQ ID NO:284, b is an integer of 15 to 675, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:284, and where b is greater than or equal to a + 14.	
830400	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1325 of SEQ ID NO:285, b is an integer of 15 to 1339, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:285, and where b is greater than or equal to a + 14.	T40239, T41103, T60782, T61153, T92326, T95403, R16530, R16587, R46049, R49231, R49231, R46049, H26122, H26387, H67872, H67872, H97917, N23194, N29748, N57652, N64158, N67587, N77509, N80178, W03502, W23838, W57929, W72584, AA011087, AA011088, AA070667, AA074878, AA075068, AA075019, AA076166, AA079857, AA082235, AA099016, AA099093, AA100754, AA113152, AA126886, AA128207, AA126932, AA128546, AA130882, AA136302, AA136408, AA143052, AA143693, AA148079, AA149931, AA151001, AA151091, AA155761, AA157290, AA160781, AA165535, AA173281, AA179903, AA180211, AA181162, AA181673, AA181986.

		AA187551, AA191657, AA192202, AA196746, AA196944, AA223166, AA224485, AA242866, AA397377, AA468734, AA514807, AA523669, AA534165, AA534195, AA565551, AA565552, H67199, AA581627, AA588734, AA588752, AA593857, AA595407, AA595555, AA603965, AA610486, AA614617, AA631563, AA635960, AA636057, AA576256, AA577470, AA580124, AA580480, AA714208, AA728790, AA729276, AA729361, AA744895, AA745002, AA746940, AA746948, AA747346, AA804602, AA810873, AA833970, AA836938, AA838563, AA858405, AA872330, AA922975, AA946823, AA954185, AA962678, AA978008, AA985504, AA987717, A1004904, A1017374, A1075264, F19611, A1089951, N83301, AA082282, AA091465, AA093298, AA094459
830437	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1384 of SEQ ID NO:286, b is an integer of 15 to 1398, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:286, and where b is greater than or equal to a + 14.	
830458	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 912 of SEQ ID NO:287, b is an integer of 15 to 926, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:287, and where b is greater than or equal to a + 14.	T47583, T47584, T49761, T50148, T50203, T47161, R11382, R14878, H18220, H18258, R92715, N78687, W20222, W58210, W58319, W72115, W77801, W79332, W79431, W79487, W79631, W94437, N90582, AA043441, AA043442, AA148009, AA147947, AA150837, AA224863, AA225964, AA226110, AA259194, AA259193, AA420769, AA420829, AA470787, AA493672, AA501962, AA502082, AA506908, AA528607, AA588435, AA603500, AA603814, AA627229, AA627233, AA627240, AA632058, AA632689, AA639239, AA579023, AA580698, AA662633, AA661967, AA665215, AA729443, AA730546, AA737851, AA745424, AA745526, AA747036, AA878568, AA879157, AA886627, AA902180, AA922294, AA933050, AA962580, AA977360, AA985679, AA996058, AA996145, A1053546, A1085892, N83274, W15194, N88934, C04128, AA640839, AA091328, AA093116, AA094048, AA094287
830466	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3080 of SEQ ID NO:288, b is an integer of 15 to 3094, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:288, and where b is greater than or equal to a + 14.	
830497	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1969 of SEQ ID NO:289, b is an integer of 15 to 1983, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:289, and where b is greater than or equal to a + 14.	T47088, T47089, T58430, T58462, R00971, H42144, N77388, W51953, W52502, AA036671, AA114976, AA593693, AA575857, C01052
830511	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1284 of SEQ ID NO:290, b is an integer of 15 to 1298, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:290, and where b is greater than or equal to a + 14.	
830512	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2445 of SEQ ID NO:291, b is an integer of 15 to 2459, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:291, and where b is greater than or equal to a + 14.	
830513	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 556 of SEQ ID NO:292, b is an integer of 15 to 570, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:292, and where b is greater than or equal to a + 14.	
830540	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2454 of SEQ ID NO:293, b is an integer of 15 to 2468, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:293, and where b is greater than or equal to a + 14.	T66458, T98908, R15832, R21916, R22565, H12306, R99043, H57499, H82961, AA046203, AA046283, AA055081, AA055141, AA173411, AA173467, AA173996, AA176693
830550	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1066 of SEQ ID NO:294, b is an integer of 15 to 1080, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:294, and where b is greater than or equal to a + 14.	R50040, R60172, R71512, H09125, H09475, H21789, R84538, R85928, R94762, R96633, R96680, R97580, H53135, H53241, H82960, H83191, N68166, N68684, N77903, N80174, N80625, N92442, N93242, N93314, N98261, W03498, W05839, W20000, W25100, W31279, W37087, W60751, W67554, W67583, W73877, W77814, W80412, W95868, W95954, N91343,

		AA026891, AA026892, AA033547, AA034170, AA069175, AA088435, AA151307, AA161037, AA237097, AA251326, AA251729, AA428848, AA429940, AA287366, AA287504, AA470593, AA470594, AA514493, AA564438, H67293, AA582501, AA583172, AA587111, AA602517, AA603483, AA569955, AA732412, AA737913, AA810504, AA832193, AA857743, AA915872, AA915896, AA915992, AA948498, AA983538, AA991546, AI052409, AI053921
830567	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2681 of SEQ ID NO:295, b is an integer of 15 to 2695, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:295, and where b is greater than or equal to a + 14.	R69708, R75813, R75814, N22294, N47088, N50300, N50983, N81194, N93236, AA074258, AA083867, AA083973, AA195801, AA196063, AA252500, AA252415, AA258014, AA287593, AA291332, AA492017, AA522597, AA617684, AA713960, AA740158, AA749386, AA808100, AA808680, AA814350, AA826203, AA831453, AA887306, AA918645, AA972761, N88184
830586	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1380 of SEQ ID NO:296, b is an integer of 15 to 1394, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:296, and where b is greater than or equal to a + 14.	R99131, H81094, W01508, AA045861, AA085947, AA102188, AA146772, AA148854, AA233843, AA424679, AA491204, AA514459, AA532818, AA809984, AA838521, AA954880, AI089939
830632	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 984 of SEQ ID NO:297, b is an integer of 15 to 998, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:297, and where b is greater than or equal to a + 14.	T47818, R21519, R21621, R22056, R22112, R31393, R32890, R48823, R48824, R66656, R67377, R71682, H25037, H25038, H25842, H26215, H26515, H26994, H28312, H28313, H29756, H30178, H41920, H41966, H42490, H43473, R83733, R85464, R88798, R89058, R93321, H52733, H59363, H60020, H73314, H73513, H80831, H80832, H82603, H86794, H86795, H86853, H86852, H92710, H96832, H98741, N23451, N23463, N26478, N26861, N31350, N31593, N35529, N39970, N42652, N62104, N74283, N76446, N78334, N92771, W04383, W19424, W20392, W24569, W35168, W60060, W60111, W84373, W84420, AA025658, AA029558, AA062705, AA062707, AA063390, AA062771, AA081934, AA126557, AA136019, AA151638, AA192245, AA194655, AA470430, AA493634, AA552261, AA552348, AA565278, AA565462, AA583788, AA593646, AA594277, AA604853, AA613755.

		AA632449, AA632505, AA657974, AA730677, AA730804, AA748100, AA765824, AA857805, AA954102, AA961763, AA962500, AA974525, AA983564, AA987422, AA987934, AA989423, A1000235, F19140, N84058, N84994, C03222, AA091370, AA091545
830645	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1652 of SEQ ID NO:298, b is an integer of 15 to 1666, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:298, and where b is greater than or equal to a + 14.	
830652	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2430 of SEQ ID NO:299, b is an integer of 15 to 2444, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:299, and where b is greater than or equal to a + 14.	
830659	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1012 of SEQ ID NO:300, b is an integer of 15 to 1026, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:300, and where b is greater than or equal to a + 14.	T65101, T66494, T66636, T84051, T86086, R05580, R13805, R15868, R16050, H05221, H05222, H13512, H16069, H18275, H21247, H44169, R83705, R92365, H48479, H48643, H54436, H54526, H73472, H73726, H97495, N29822, N30479, N31551, N32563, N39176, N39961, N45251, N68667, N91684, W07693, W32510, W32607, W38017, W74179, W79849, AA018138, AA028191, AA033572, AA033571, AA042915, AA043002, AA053878, AA054501, AA058344, AA099556, AA101993, AA134643, AA143525, AA176419, AA424269, AA555196, AA769107, AA987653, A1076212, N84624, N85006, A1084132, A1084154, AA094327
830696	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 816 of SEQ ID NO:301, b is an integer of 15 to 830, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:301, and where b is greater than or equal to a + 14.	
830706	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3286 of SEQ ID NO:302, b is an integer of 15 to 3300, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:302, and where b is	



	greater than or equal to $a + 14$ .	
830743	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 461 of SEQ ID NO:303, b is an integer of 15 to 475, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:303, and where b is greater than or equal to <math>a + 14</math>.</p>	<p>N30323, N56655, N69079, N69946, N80244, N98327, W07371, W42660, W45185, W55989, W56279, W68387, W68503, W72685, W74708, W74677, W77791, W80647, AA010723, AA011171, AA033537, AA034221, AA035773, AA056334, AA062820, AA132021, AA132124, AA135594, AA135681, AA151293, AA151292, AA181331, AA186392, AA187084, AA228662, AA228680, AA229819, AA468802, AA470869, AA483684, AA491891, AA514852, AA533423, AA548946, AA563674, AA564612, AA594511, AA600707, AA622053, AA635767, AA639353, AA662887, AA664589, AA729365, AA747035, AA747774, AA814124, AA873167, AA886626, AA903495, AA903981, AA922807, AA969768, AA973174, AA974282, AA976458, AA977143, AA983332, AI025140, AI066527, F19035, F19464, C03984, C13986, C14221, C14299, C14336, C14341, C14380, C14385, C14396, C14434, C14483, C14504, C14513, C15788</p>
830770	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2888 of SEQ ID NO:304, b is an integer of 15 to 2902, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:304, and where b is greater than or equal to <math>a + 14</math>.</p>	
830830	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1539 of SEQ ID NO:305, b is an integer of 15 to 1553, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:305, and where b is greater than or equal to <math>a + 14</math>.</p>	
830838	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1973 of SEQ ID NO:306, b is an integer of 15 to 1987, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:306, and where b is greater than or equal to <math>a + 14</math>.</p>	
830851	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 771 of SEQ ID NO:307, b is an integer of 15 to 785, where both a and b correspond to the positions of nucleotide</p>	

	residues shown in SEQ ID NO:307, and where b is greater than or equal to a + 14.	
830853	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2164 of SEQ ID NO:308, b is an integer of 15 to 2178, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:308, and where b is greater than or equal to a + 14.	
830856	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 861 of SEQ ID NO:309, b is an integer of 15 to 875, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:309, and where b is greater than or equal to a + 14.	
830862	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 742 of SEQ ID NO:310, b is an integer of 15 to 756, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:310, and where b is greater than or equal to a + 14.	T46908, T46909, T46921, T46922, T50921, T52918, T53038, T56001, T59028, T94115, T94204, R53898, R53908, H02747, H27523, H77792, H88026, H88248, H90255, H96065, H88248, N21994, N64072, N73723, N74262, N75815, N77939, W03894, W23887, AA081082, AA113423, AA115852, AA143290, AA143335, AA146868, AA157054, AA157208, AA179118, AA187792, AA188385, AA468513, AA468983, AA501970, AA523481, AA528461, AA533759, AA533618, AA535287, AA541570, AA558529, L44430, AA604961, AA568927, AA659814, AA661481, AA661996, AA731036, AA748135, AA847331, AA878667, AA885549, AA935403, AA938035, A1001062, F19242, N83489, N83646, N84328, N85002, N85167, N85223, N85325, N85833, N85949, N86287, N86329, N87923, N83150, AA642852, AA091775, AA093919
830879	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 837 of SEQ ID NO:311, b is an integer of 15 to 851, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:311, and where b is greater than or equal to a + 14.	T62074, T62130, T67747, T67857, R44816, R48904, R44816, H13822, H29311, W37451, N90567, AA128266, AA164552, AA235044, AA236012, AA746229, AA962194, AA987868, AA994828, A1000188, A1015557
830919	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1321 of SEQ ID NO:312, b is an integer of 15 to 1335, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:312, and where b is	

	greater than or equal to $a + 14$ .	
830969	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 502 of SEQ ID NO:313, b is an integer of 15 to 516, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:313, and where b is greater than or equal to $a + 14$ .	
830991	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1819 of SEQ ID NO:314, b is an integer of 15 to 1833, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:314, and where b is greater than or equal to $a + 14$ .	
831002	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1340 of SEQ ID NO:315, b is an integer of 15 to 1354, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:315, and where b is greater than or equal to $a + 14$ .	
831003	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2407 of SEQ ID NO:316, b is an integer of 15 to 2421, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:316, and where b is greater than or equal to $a + 14$ .	T64373, N48387, W52748, W52754, W70187, AA029541, AA034463, AA058497, AA082001, AA082284, AA085967, AA088397, AA133444, AA133477, AA149568, AA187408, AA226818, AA226855
831021	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1078 of SEQ ID NO:317, b is an integer of 15 to 1092, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:317, and where b is greater than or equal to $a + 14$ .	
831036	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1366 of SEQ ID NO:318, b is an integer of 15 to 1380, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:318, and where b is greater than or equal to $a + 14$ .	
831071	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2598 of SEQ ID NO:319, b is an integer of 15 to 2612, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:319, and where b is greater than or equal to $a + 14$ .	

831094	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 929 of SEQ ID NO:320, b is an integer of 15 to 943, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:320, and where b is greater than or equal to a + 14.	
831099	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2945 of SEQ ID NO:321, b is an integer of 15 to 2959, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:321, and where b is greater than or equal to a + 14.	<p> T58120, T90056, T90158, T94290,  T94639, R69200, R69590, R69678,  R76031, H65424, H65425, N32273,  N40465, N47619, N48504, N66482,  N67212, N67243, N67881, N71915,  N72302, N92538, N94512, W03004,  W06930, W20370, W23962, W38380,  W38525, W38716, W39486, W42582,  W42594, W44824, W48665, W51898,  W52474, W53040, W60142, N90075,  N90423, AA025009, AA024962,  AA029382, AA029726, AA031500,  AA031546, AA037283, AA037749,  AA039259, AA044145, AA044261,  AA065061, AA070027, AA082386,  AA083544, AA083757, AA088692,  AA088829, AA099577, AA100236,  AA100245, AA100517, AA112739,  AA112091, AA116055, AA130509,  AA130510, AA132145, AA135909,  AA136308, AA136413, AA136528,  AA136751, AA146853, AA146852,  AA148049, AA156943, AA159808,  AA165022, AA173867, AA181803,  AA182563, AA182776, AA186553,  AA186858, AA192463, AA194658,  AA255837, AA261995, AA423999,  AA493599, AA228337, AA228348,  AA506755, AA506420, AA513968,  AA514542, AA522900, AA524125,  AA551485, AA553912, AA563900,  AA594966, AA602651, AA610339,  AA610361, AA614772, AA618333,  AA576828, AA665045, AA714493,  AA729997, AA738153, AA768641,  AA804931, AA806122, AA827914,  AA857664, AA876216, AA877173,  AA877646, AA894385, AA922728,  AA947835, AA977110, AA984009,  AA988275, AA988567, N84005,  N84600, N84939, N85553, A1084028,  N86141, N88049, N89450, N89451,  C02877, C02980, C03631, C05243,  C05332, C05993, AA642453,  AA090838, AA089614, AA091652,  AA093130, AA093851 </p>
831113	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b.	AA122085, AA147371, A1005336

	where a is any integer between 1 to 788 of SEQ ID NO:322, b is an integer of 15 to 802, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:322, and where b is greater than or equal to a + 14.	
831120	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1710 of SEQ ID NO:323, b is an integer of 15 to 1724, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:323, and where b is greater than or equal to a + 14.	
831172	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2247 of SEQ ID NO:324, b is an integer of 15 to 2261, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:324, and where b is greater than or equal to a + 14.	
831178	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1199 of SEQ ID NO:325, b is an integer of 15 to 1213, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:325, and where b is greater than or equal to a + 14.	
831184	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2750 of SEQ ID NO:326, b is an integer of 15 to 2764, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:326, and where b is greater than or equal to a + 14.	
831203	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1750 of SEQ ID NO:327, b is an integer of 15 to 1764, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:327, and where b is greater than or equal to a + 14.	
831210	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 557 of SEQ ID NO:328, b is an integer of 15 to 571, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:328, and where b is greater than or equal to a + 14.	AA057014, AA059289
831228	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 459 of SEQ ID	

	NO:329, b is an integer of 15 to 473, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:329, and where b is greater than or equal to a + 14.	
831256	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1321 of SEQ ID NO:330, b is an integer of 15 to 1335, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:330, and where b is greater than or equal to a + 14.	R17500, R48877, H12160, R84358, H90367, N33987, AA161057
831257	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1032 of SEQ ID NO:331, b is an integer of 15 to 1046, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:331, and where b is greater than or equal to a + 14.	T49922, T85470, R37545, H03610, AA005184, AA045346
831277	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1297 of SEQ ID NO:332, b is an integer of 15 to 1311, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:332, and where b is greater than or equal to a + 14.	
831317	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1430 of SEQ ID NO:333, b is an integer of 15 to 1444, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:333, and where b is greater than or equal to a + 14.	T39850, T47708, T47709, T47863, T51491, T52507, T53819, T53951, T55884, T60330, T60359, T60364, T60380, T60480, T60634, T61198, T61280, T61878, T62028, T67704, T67742, T67780, T67853, T67910, T68010, T68058, T68132, T68154, T68379, T68998, T68999, T69078, T69079, T69119, T69177, T69442, T70496, T71707, T72285, T72505, T72998, T73123, T73679, T73756, T73761, T73837, T74031, T74383, T74405, T74655, T74784, T74798, T74892, T85320, T85533, R83453, R88738, R90989, R90995, H58528, H59441, H60092, H60282, H60589, H67401, H67458, H72811, H79422, H80518, H80570, H91775, H91816, N57814, W60714, W60741, AA034367, AA040550, AA040667, AA242768, AA424551, AA424642, R29495, R29660, R29089, C21224
831339	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1016 of SEQ ID NO:334, b is an integer of 15 to 1030, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:334, and where b is	

	greater than or equal to $a + 14$ .	
831363	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2113 of SEQ ID NO:335, b is an integer of 15 to 2127, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:335, and where b is greater than or equal to $a + 14$ .	T58736, T58803, T61766, T64470, T64610, T67816, T68878, T68952, T72450, T72511, T72968, T73613, T73939, H41914, H41957, N75040, W05718, AA043436, AA043416, AA045231, AA058807, AA484773, AA502762, AA503811, AA527553, AA744171, AA902935, AA903099, A1002033
831367	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 833 of SEQ ID NO:336, b is an integer of 15 to 847, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:336, and where b is greater than or equal to $a + 14$ .	
831379	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 688 of SEQ ID NO:337, b is an integer of 15 to 702, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:337, and where b is greater than or equal to $a + 14$ .	R26001, R26804, R82629, R82630, H21598, H27310, H27309, H38082, H38083, H44451, H44494, H47613, R83356, R83791, R96066, R96103, H72512, H72910, H80449, H80450, H90511, H90607, N71766, N94349, W16956, W23496, W24351, W46455, W46523, W48658, W70263, W73002, W76239, W92963, W92964, AA157329, AA157426, AA458665, AA229554, AA280810, AA280936, AA490898, AA491084, AA493730, AA527336, AA534762, AA535794, F17720, AA603439, AA568655, AA659071, AA826699, AA872867, AA876999, AA932403, AA953149, AA953343, A1000023, A1017353, A1094807, N95548, C02063, C04109
831385	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 861 of SEQ ID NO:338, b is an integer of 15 to 875, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:338, and where b is greater than or equal to $a + 14$ .	
831390	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1434 of SEQ ID NO:339, b is an integer of 15 to 1448, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:339, and where b is greater than or equal to $a + 14$ .	T53890, T54037, T81546, T81973, R20470, R21066, R45288, R46246, R45288, R46246, H13340, H17537, H30523, R85229, R85230, R94643, R94685, R94686, H52010, H52125, H71328, H71376, N25973, N28794, N30891, N36603, N41703, N62205, N63213, N76503, W45706, W44353, W52126, W74523, W79862, AA033566, AA034468, AA099015, AA099092, AA100315, AA129588, AA167137, AA194961, AA226935, AA226943, AA418898, AA428909,

		AA485083, AA485195, AA505107, AA506087, AA516109, AA523370, AA617946, AA627402, AA573848, AA574063, AA809830, AA834509, AA837985, AA862394, AA862989, AA974789, AA988779, AI000171, AI094917, W24010, N88026, C20972
831391	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 829 of SEQ ID NO:340, b is an integer of 15 to 843, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:340, and where b is greater than or equal to a + 14.	
831405	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1279 of SEQ ID NO:341, b is an integer of 15 to 1293, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:341, and where b is greater than or equal to a + 14.	T54632, T54714, T55384, T55812, T56220, T60613, T69578, R08164, R08219, T78003, T78164, R01577, R12676, R16414, H60551, N21984, N25878, N25887, N75352, W01648, W72541, W76166, W86984, W86811, W88909, W88788, AA022691, AA022784, AA193302, AA194256, AA235873, AA425660, AA573463, AA953249, R29055
831442	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1259 of SEQ ID NO:342, b is an integer of 15 to 1273, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:342, and where b is greater than or equal to a + 14.	
831476	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1779 of SEQ ID NO:343, b is an integer of 15 to 1793, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:343, and where b is greater than or equal to a + 14.	R48303, R48405, R73778, H30456, H81254, W02773, W24831, W73089, W73194, AA034015, AA151153, AA151154, AA418429, AA424672, AA593592, AA910532, AA987246, AI001017, C02335, C04320
831488	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1658 of SEQ ID NO:344, b is an integer of 15 to 1672, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:344, and where b is greater than or equal to a + 14.	
831518	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2095 of SEQ ID NO:345, b is an integer of 15 to 2109, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:345, and where b is greater than or equal to a + 14.	



831519	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1700 of SEQ ID NO:346, b is an integer of 15 to 1714, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:346, and where b is greater than or equal to a + 14.	
831521	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1658 of SEQ ID NO:347, b is an integer of 15 to 1672, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:347, and where b is greater than or equal to a + 14.	
831550	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1469 of SEQ ID NO:348, b is an integer of 15 to 1483, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:348, and where b is greater than or equal to a + 14.	
831560	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1828 of SEQ ID NO:349, b is an integer of 15 to 1842, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:349, and where b is greater than or equal to a + 14.	T56438, R22852, R46063, R52365, R81781, R81879, H02958, H04256, H05743, H05849, H23235, H23349, H43210, H43260, H87699, H91571, W00708, W56717, W56762, W70251, W70252, AA026841, AA027043, AA041261, AA041495, AA043451, AA043452, AA054505, AA054366, AA055050, AA055129, AA147629, AA147667
831562	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2994 of SEQ ID NO:350, b is an integer of 15 to 3008, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:350, and where b is greater than or equal to a + 14.	
831570	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2742 of SEQ ID NO:351, b is an integer of 15 to 2756, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:351, and where b is greater than or equal to a + 14.	
831593	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1631 of SEQ ID NO:352, b is an integer of 15 to 1645, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:352, and where b is	

	greater than or equal to $a + 14$ .	
831596	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1623 of SEQ ID NO:353, b is an integer of 15 to 1637, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:353, and where b is greater than or equal to $a + 14$ .	
831627	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1105 of SEQ ID NO:354, b is an integer of 15 to 1119, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:354, and where b is greater than or equal to $a + 14$ .	AA147578, AA156449, AA588796, AA863066, D80116
831649	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 724 of SEQ ID NO:355, b is an integer of 15 to 738, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:355, and where b is greater than or equal to $a + 14$ .	R21047
831664	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1952 of SEQ ID NO:356, b is an integer of 15 to 1966, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:356, and where b is greater than or equal to $a + 14$ .	R35205, H13039, R84255, W24589, W93157, AA186436, AA188774, AA227246, AA658889, AA838204, W22056, W25833, W28198, W28494, AA090436, AA089530, AA089667
831674	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1548 of SEQ ID NO:357, b is an integer of 15 to 1562, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:357, and where b is greater than or equal to $a + 14$ .	
831684	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1917 of SEQ ID NO:358, b is an integer of 15 to 1931, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:358, and where b is greater than or equal to $a + 14$ .	T64083, R54664, R54665, W52888, W60096, W60162, AA009843, AA009870, AA236225, AA236291, AA459452, AA465675, AA554776, AA563899, AA583755, AA593849, AA596013, AA627978, AA573921, AA747840, AA828086, AA830260, AA837593, AA996154, C01662
831687	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 855 of SEQ ID NO:359, b is an integer of 15 to 869, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:359, and where b is greater than or equal to $a + 14$ .	T49489, R05976, R55046, N21648, N31054, N48001, AA464953, AA426224, AA430556, AA600829, AA744708, AA747361, AA976473, A1097658

831726	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 547 of SEQ ID NO:360, b is an integer of 15 to 561, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:360, and where b is greater than or equal to a + 14.	
831736	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1666 of SEQ ID NO:361, b is an integer of 15 to 1680, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:361, and where b is greater than or equal to a + 14.	T60384, T93026, T83297, R17403, R17423, R21319, H65765, N94506, W23956, W24344, W45068, W57786, W57860, W81343, AA058929, AA151788, AA151833
831762	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 726 of SEQ ID NO:362, b is an integer of 15 to 740, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:362, and where b is greater than or equal to a + 14.	
831801	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1310 of SEQ ID NO:363, b is an integer of 15 to 1324, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:363, and where b is greater than or equal to a + 14.	T39530, T64430, R36089, H12597, H12647, H19534, H20096, H26648, H26663, W15192, W45569, W45621, AA018144, AA018145, AA018470, AA039510, AA039529, AA047549, AA047837, AA057785, AA074201, AA075686, AA079138, AA135599, AA135658, AA147502, AA147931, AA156715, AA156811, AA188215, AA186362, AA425996, AA283917, AA514670, AA522463, AA714301, AA742700, AA872728, AA887841, AA971644, AI015637, AI053971, AI054233, AI074507, AI084901, W28363
831848	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2839 of SEQ ID NO:364, b is an integer of 15 to 2853, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:364, and where b is greater than or equal to a + 14.	T77112, R13655, R19353, R19511, R24780, R35812, R36752, R38177, R43861, R44629, R45511, R43861, R45511, R44629, R71248, R71299, R82784, H00629, H01917, H04479, H45706, H45757, H94039, H94125, N30574, N57220, AA033684, AA114107, AA253260, AA461547, AA460619, AA715125, AI096588, C03714, AA092127
831861	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1823 of SEQ ID NO:365, b is an integer of 15 to 1837, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:365, and where b is greater than or equal to a + 14.	T57456, T58038, T58104, R08156, R27046, R28341, R28340, N32411, N56831, N78961, W16984, W16954, W17352, W74522, W79861, AA025882, AA025883, AA084109, AA100121, AA100060, AA132713

831866	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1809 of SEQ ID NO:366, b is an integer of 15 to 1823, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:366, and where b is greater than or equal to a + 14.	
831878	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 884 of SEQ ID NO:367, b is an integer of 15 to 898, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:367, and where b is greater than or equal to a + 14.	
831899	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1103 of SEQ ID NO:368, b is an integer of 15 to 1117, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:368, and where b is greater than or equal to a + 14.	AA159048, AA768390, AA806956
831913	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2212 of SEQ ID NO:369, b is an integer of 15 to 2226, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:369, and where b is greater than or equal to a + 14.	
831972	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3622 of SEQ ID NO:370, b is an integer of 15 to 3636, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:370, and where b is greater than or equal to a + 14.	
831985	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4025 of SEQ ID NO:371, b is an integer of 15 to 4039, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:371, and where b is greater than or equal to a + 14.	
831986	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1585 of SEQ ID NO:372, b is an integer of 15 to 1599, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:372, and where b is greater than or equal to a + 14.	
832010	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 450 of SEQ ID NO:373, b is an integer of 15 to 464, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:373, and where b is greater than or equal to a + 14.	
832016	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 876 of SEQ ID NO:374, b is an integer of 15 to 890, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:374, and where b is greater than or equal to a + 14.	
832041	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1860 of SEQ ID NO:375, b is an integer of 15 to 1874, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:375, and where b is greater than or equal to a + 14.	R63637, R92994, N30838, N30844, N41366, N41372, AA639771
832044	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2004 of SEQ ID NO:376, b is an integer of 15 to 2018, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:376, and where b is greater than or equal to a + 14.	T56668, R09616, R20197, R44983, R52998, R52997, R44983, H06485, H06543, H09799, H09885, H24790, N57987, N62197, N76494, W02915, W78217, AA041290, AA041323, AA074236, AA075127, AA075212, AA075847, AA088708, AA088793, AA112359, AA121803, AA151677, AA166711, AA167069, AA181608, AA188478, AA194067, AA194182, AA221025, AA221037, AA228036, AA228145, AA557397, AA564567, AA582681, AA582151, AA601549, AA613841, AA832393, AA846987, AA865356, AA866164, AA872667, AA862962, AA911092, AA937359, AI000072, D83877
832049	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 804 of SEQ ID NO:377, b is an integer of 15 to 818, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:377, and where b is greater than or equal to a + 14.	
832122	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2551 of SEQ ID NO:378, b is an integer of 15 to 2565, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:378, and where b is greater than or equal to a + 14.	
832148	Preferably excluded from the present invention are	T78202, R37864, R62706, R78737.

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1666 of SEQ ID NO:379, b is an integer of 15 to 1680, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:379, and where b is greater than or equal to a + 14.	R78736, H62109, N50394, N51659, N67973, N80394, W33108, W33107, AA016055, AA074831, AA075097, AA256793, AA256472, AA418825, AA418922, AA430755, AA280663, AA281049, AA467867, AA502148, H71558, AA721278, AA748880, AA809767, AA810852, AA832174, AA911263, AA938484, AA975282, D80672, D81573, D81746, A1096900, C02375
832197	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1253 of SEQ ID NO:380, b is an integer of 15 to 1267, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:380, and where b is greater than or equal to a + 14.	
832237	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1017 of SEQ ID NO:381, b is an integer of 15 to 1031, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:381, and where b is greater than or equal to a + 14.	R36943, R42259, R53230, R42259, H09607, AA150724, AA831055
832246	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1583 of SEQ ID NO:382, b is an integer of 15 to 1597, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:382, and where b is greater than or equal to a + 14.	H13698, H13750, R91283, R91322, H97506, N64810, N75659, W61290, W65386, H54890, AA568261, AA830860, AA863239, AA873329, AA938701, D82264, C18047
832256	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 161 of SEQ ID NO:383, b is an integer of 15 to 175, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:383, and where b is greater than or equal to a + 14.	
832280	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2157 of SEQ ID NO:384, b is an integer of 15 to 2171, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:384, and where b is greater than or equal to a + 14.	H09977, H09978, R89392, R94438, H93033, H93466, H93904, N29334, N53767, N57027, N71868, N71879, N73126, W24652, AA026682, AA047124, AA127259, AA224396, AA224473, AA227220, AA236734, AA236763, AA236910, AA236919
832285	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2350 of SEQ ID NO:385, b is an integer of 15 to 2364, where both a and b correspond to the positions of nucleotide	R12740, R14184, R15171, R26447, R28455, R34165, R35396, R39792, R40473, R49696, R41588, R40473, R49696, R70668, R70669, R79640, R79833, H02312, H08199, H08297, R99351, H84241, H84567, H85554,

	residues shown in SEQ ID NO:385, and where b is greater than or equal to a + 14.	N24354, N25230, N32462, N33863, N64676, N70374, N80109, W47526, W47527, W80678, W80934, W93668, AA082195, AA223758, AA243624, AA255527, AA256711, AA262387, AA281015, AA281094, AA281183, AA281203, AA287927, AA287991, AA505084, AA505086, AA525301, AA553559, AA564243, AA582189, AA737010, AA808271, AA872481, AA937541, A1015987, C01015, C20842
832294	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2850 of SEQ ID NO:386, b is an integer of 15 to 2864, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:386, and where b is greater than or equal to a + 14.	
832326	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2669 of SEQ ID NO:387, b is an integer of 15 to 2683, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:387, and where b is greater than or equal to a + 14.	
832333	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1432 of SEQ ID NO:388, b is an integer of 15 to 1446, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:388, and where b is greater than or equal to a + 14.	
832346	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 709 of SEQ ID NO:389, b is an integer of 15 to 723, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:389, and where b is greater than or equal to a + 14.	T88928, R12446, R37113, R42462, H15692, H18859, N34664, AA132220, AA224337, AA460720, AA492479
832370	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1032 of SEQ ID NO:390, b is an integer of 15 to 1046, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:390, and where b is greater than or equal to a + 14.	
832381	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 685 of SEQ ID NO:391, b is an integer of 15 to 699, where both a	

	and b correspond to the positions of nucleotide residues shown in SEQ ID NO:391, and where b is greater than or equal to a + 14.	
832394	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1531 of SEQ ID NO:392, b is an integer of 15 to 1545, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:392, and where b is greater than or equal to a + 14.	
832454	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 735 of SEQ ID NO:393, b is an integer of 15 to 749, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:393, and where b is greater than or equal to a + 14.	T57094, T58711, T68990, T71879, R92183, H93778, N63977, N80768, AA034382, AA034383, AA057664, AA235744, AA425865, AA524693, AA551804, AA523604, AA614639, AA740316, AA872373, AA938571, AA947337, R28997, AA640968, C21135
832465	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 597 of SEQ ID NO:394, b is an integer of 15 to 611, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:394, and where b is greater than or equal to a + 14.	R36004, R36378, H71881, H96279, N50049, N63692, W74426, W79180, W87805, AA421015, AA527679, AA833773, AA987375, F19351, AA642491, C14893, C14937
832475	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1842 of SEQ ID NO:395, b is an integer of 15 to 1856, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:395, and where b is greater than or equal to a + 14.	
832495	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2637 of SEQ ID NO:396, b is an integer of 15 to 2651, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:396, and where b is greater than or equal to a + 14.	
832498	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2493 of SEQ ID NO:397, b is an integer of 15 to 2507, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:397, and where b is greater than or equal to a + 14.	T67126, T67127, R13516, R20638, H64071, N22361, N25516, N39506, N75609, N78204, W40313, W45344, AA074739, AA074803, AA143509, AA523999, AA552542, AA554032, N20483, AA588804, AA617733, AA577150, AA577309, AA579423, AA740813, AA835721, AA836640, AA909766, AA936979, AA947310, N26815, A1085484, D78707, W67520, W68152
832501	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b.	



	where a is any integer between 1 to 1259 of SEQ ID NO:398, b is an integer of 15 to 1273, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:398, and where b is greater than or equal to a + 14.	
832505	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3760 of SEQ ID NO:399, b is an integer of 15 to 3774, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:399, and where b is greater than or equal to a + 14.	T50501, T50636, T92136, R52390, R59648, H06170, H28886, H28885, R96577, R96600, H84171, H94122, H98228, N36866, N36872, N46136, N46142, N63589, N66323, W48779, W49798, AA029033, AA054487, AA058524, AA084466, AA086177, AA098967, AA099485, AA100345, AA147008, AA147009, AA146910, AA146909, AA160346, AA159865, AA192832, AA203513, AA252521, AA252553, AA463513, AA463570, AA421250, AA425704, AA427774, AA278328, AA278999, AA280712, AA281733, AA281871, AA282407, AA282626, AA283639, AA542810, AA557893, AA568486, AA569759, AA577522, AA659517, AA659737, AA664537, AA713950, AA805488, AA835999, AA876619, AA931568, AA935758, AA946722, A1000603, D82640
832539	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1508 of SEQ ID NO:400, b is an integer of 15 to 1522, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:400, and where b is greater than or equal to a + 14.	H72563, AA160114, AA159654, AA161261, AA165097, AA223618, AA243203
832554	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1356 of SEQ ID NO:401, b is an integer of 15 to 1370, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:401, and where b is greater than or equal to a + 14.	
832569	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1398 of SEQ ID NO:402, b is an integer of 15 to 1412, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:402, and where b is greater than or equal to a + 14.	
832578	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1736 of SEQ ID NO:403, b is an integer of 15 to 1750, where both a and b correspond to the positions of nucleotide	R09545, R09658, R09967, R11471, R16714, R16910, R16965, R19372, R80788, R80988, H28725, H63085, H63169, H75499, H75500, N33554, N41536, N52961, N52966, N74070, W01039, W57770, W57843, W60109,

	residues shown in SEQ ID NO:403, and where b is greater than or equal to $a + 14$ .	W91978, W92107, AA001984, AA004653, AA027155, AA418427, AA281395, AA532870, AA564737, AA588889, AA631841, AA639548, AA765363, AA877896, AA887900, AA974026, A1057270, A1084214, A1094490, A1096750, A1097632, A1096745
832615	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1325 of SEQ ID NO:404, b is an integer of 15 to 1339, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:404, and where b is greater than or equal to $a + 14$ .	
832620	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 468 of SEQ ID NO:405, b is an integer of 15 to 482, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:405, and where b is greater than or equal to $a + 14$ .	
832632	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1399 of SEQ ID NO:406, b is an integer of 15 to 1413, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:406, and where b is greater than or equal to $a + 14$ .	
832633	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1679 of SEQ ID NO:407, b is an integer of 15 to 1693, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:407, and where b is greater than or equal to $a + 14$ .	R69173, AA053085, AA053597, AA427705, AA730380, AA865757, AA911497, A1083906
833483	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1328 of SEQ ID NO:408, b is an integer of 15 to 1342, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:408, and where b is greater than or equal to $a + 14$ .	
834574	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2403 of SEQ ID NO:409, b is an integer of 15 to 2417, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:409, and where b is greater than or equal to $a + 14$ .	
834859	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1387 of SEQ ID NO:410, b is an integer of 15 to 1401, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:410, and where b is greater than or equal to a + 14.	
834861	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3002 of SEQ ID NO:411, b is an integer of 15 to 3016, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:411, and where b is greater than or equal to a + 14.	
834890	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 944 of SEQ ID NO:412, b is an integer of 15 to 958, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:412, and where b is greater than or equal to a + 14.	T40255, T40256, T40770, T40778, T40803, T41118, T94280, T94627, R13201, R32388, R32389, R53769, H28669, H39502, H42532, H42533, R82957, R85205, R85206, R88749, R90730, R90754, R91006, R92221, H56130, H56210, H58500, H57659, H69479, H69882, N22547, N31579, N42592, N45537, N48687, N56654, N58050, N69059, N73728, N80748, N92927, N94545, W20471, W30838, W52039, W60171, W68292, W93085, W93140, N91563, AA010850, AA011289, AA054592, AA054780, AA081135, AA081214, AA081655, AA081936, AA082127, AA082262, AA088665, AA088804, AA102560, AA100239, AA114237, AA115714, AA115715, AA127304, AA127303, AA147789, AA148021, AA149821, AA152050, AA160878, AA169126, AA171659, AA172131, AA172285, AA194597, AA243129, AA419357, AA425135, AA426203, AA244212, AA505963, AA508221, AA527434, AA527878, AA565036, F17736, AA582605, AA582728, AA583851, AA586421, AA601920, AA570580, AA574367, AA577515, AA577538, AA565998, AA657417, AA659655, AA662658, AA665113, AA714991, AA770684, AA808865, AA826971, AA838507, AA876809, AA877842, AA878025, AA886042, AA886643, AA877950, AA937751, AA948428, AA947036, AA973473, AA983150, AA989361, A1082367, D78922, D82096, N83321, C04115, R29685, C17110, C18023, C18068, AA093539, AA094947, AA151399, AA654145, AA654136
835079	Preferably excluded from the present invention are	N25566, W00985, AA081340,

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 486 of SEQ ID NO:413, b is an integer of 15 to 500, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:413, and where b is greater than or equal to a + 14.	AA152231, AA164282, AA171619, AA187113, A1073932
835554	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3383 of SEQ ID NO:414, b is an integer of 15 to 3397, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:414, and where b is greater than or equal to a + 14.	
835560	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2866 of SEQ ID NO:415, b is an integer of 15 to 2880, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:415, and where b is greater than or equal to a + 14.	
835723	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1602 of SEQ ID NO:416, b is an integer of 15 to 1616, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:416, and where b is greater than or equal to a + 14.	T71562, R11480, R19383, R25309, R46659, R48802, R48913, R50038, R50376, R54963, R46659, R70030, R70077, R70161, R71380, R72303, R72352, R72772, R72773, R73386, R73387, H15775, H15776, H25239, H27204, H30499, H42026, H42613, H43207, H43254, H44314, H44936, H44975, R98394, R98395, R99071, R99271, H58902, H58903, H73590, H73436, H75566, H80599, N40440, N48475, N59703, AA515035, AA515043, AA515450, AA515650, AA515746, AA551788, AA551943, AA554602, AA557281, AA581549, AA581554, AA587399, AA593890, AA593997, AA593998, AA568878, AA568962, AA622458, AA714206, AA728962, AA737738, AA738036, AA738486, AA847538, AA865069, AA872029, AA886612, AA903381, AA916458, AA916464, AA922563, AA928617, AA928314, AA934581, AA973769, AA973767, AA983480, AA991199, AA994932, AA995182, AA999704, A1028371, AA643041
835791	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1801 of SEQ ID NO:417, b is an integer of 15 to 1815, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:417, and where b is greater than or equal to a + 14.	

835817	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1952 of SEQ ID NO:418, b is an integer of 15 to 1966, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:418, and where b is greater than or equal to a + 14.	
835840	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2838 of SEQ ID NO:419, b is an integer of 15 to 2852, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:419, and where b is greater than or equal to a + 14.	T66583, R15957, R22860, R62339, R62341, R62856, AA210836, AA214633, AA256340, AA732582, AA740735
836048	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2691 of SEQ ID NO:420, b is an integer of 15 to 2705, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:420, and where b is greater than or equal to a + 14.	
836898	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1887 of SEQ ID NO:421, b is an integer of 15 to 1901, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:421, and where b is greater than or equal to a + 14.	
836927	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2463 of SEQ ID NO:422, b is an integer of 15 to 2477, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:422, and where b is greater than or equal to a + 14.	
837344	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 763 of SEQ ID NO:423, b is an integer of 15 to 777, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:423, and where b is greater than or equal to a + 14.	
837789	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1635 of SEQ ID NO:424, b is an integer of 15 to 1649, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:424, and where b is greater than or equal to a + 14.	
838549	Preferably excluded from the present invention are	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1594 of SEQ ID NO:425, b is an integer of 15 to 1608, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:425, and where b is greater than or equal to a + 14.	
838754	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1780 of SEQ ID NO:426, b is an integer of 15 to 1794, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:426, and where b is greater than or equal to a + 14.	
838768	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 756 of SEQ ID NO:427, b is an integer of 15 to 770, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:427, and where b is greater than or equal to a + 14.	
839486	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 498 of SEQ ID NO:428, b is an integer of 15 to 512, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:428, and where b is greater than or equal to a + 14.	
839561	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1456 of SEQ ID NO:429, b is an integer of 15 to 1470, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:429, and where b is greater than or equal to a + 14.	R61634, AA135004, AA159213
839816	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 420 of SEQ ID NO:430, b is an integer of 15 to 434, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:430, and where b is greater than or equal to a + 14.	
840068	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1809 of SEQ ID NO:431, b is an integer of 15 to 1823, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:431, and where b is greater than or equal to a + 14.	
840279	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 3377 of SEQ ID NO:432, b is an integer of 15 to 3391, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:432, and where b is greater than or equal to a + 14.	
840489	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2539 of SEQ ID NO:433, b is an integer of 15 to 2553, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:433, and where b is greater than or equal to a + 14.	
840538	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2518 of SEQ ID NO:434, b is an integer of 15 to 2532, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:434, and where b is greater than or equal to a + 14.	<p>T47551, T47552, T64522, T65947, R70190, H97064, N25641, N34240, N48063, N53261, N67904, N92702, N98774, W16899, W20316, W31028, W40137, W45371, W48722, W48577, W68670, W68773, W74242, AA033573, AA033574, AA063270, AA063271, AA065213, AA064894, AA082200, AA083707, AA085441, AA085694, AA088302, AA088303, AA099844, AA099984, AA102604, AA111894, AA112981, AA115039, AA115800, AA115799, AA122221, AA126905, AA126955, AA127109, AA127548, AA127549, AA128933, AA129152, AA129743, AA133290, AA135251, AA151963, AA156321, AA156382, AA160182, AA165104, AA164688, AA173757, AA180038, AA182644, AA190866, AA190959, AA191561, AA191637, AA197348, AA195895, AA258593, AA258622, AA262173, AA464978, AA465047, AA417938, AA418116, AA292727, AA523585, AA525020, AA548516, AA551816, AA554642, AA581720, AA568802, AA579801, AA738216, AA832441, AA903391, AA938688, AA977201, AA987552, AI095102, AI084149, W27768, C05889, C06263, AA089556, AA652586, AA213999, AA213977, AA219123, AA219290, AA435695, DI2383, DI2389, AA451677, AA453222, AA485641, AA485768, AA488670, AA485947, AA486053, AA486197, AA489511, AA489512, AA489558, AA491452, AA489876, AA600130, AA608644, AA620481, AA664307, AA629754, AA629909, AA677148, AA722910, AA772440, AA773550, AI038219, AI075755, AI081932, AI084706, TI0852, T24678, F00208, F00897</p>

840545	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1808 of SEQ ID NO:435, b is an integer of 15 to 1822, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:435, and where b is greater than or equal to a + 14.	
840549	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1016 of SEQ ID NO:436, b is an integer of 15 to 1030, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:436, and where b is greater than or equal to a + 14.	R10733, T86298, R55182, R55183, H00476, H00530, H25856, H25909, H25910, N50923, W84600, W84452, AA227897, D78774, AA486440, AA629249
840551	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1618 of SEQ ID NO:437, b is an integer of 15 to 1632, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:437, and where b is greater than or equal to a + 14.	
840557	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1002 of SEQ ID NO:438, b is an integer of 15 to 1016, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:438, and where b is greater than or equal to a + 14.	
840561	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 580 of SEQ ID NO:439, b is an integer of 15 to 594, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:439, and where b is greater than or equal to a + 14.	
840562	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1566 of SEQ ID NO:440, b is an integer of 15 to 1580, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:440, and where b is greater than or equal to a + 14.	R08937, R09046, R14796, R18307, R31150, R42283, R51828, R54224, R42283, R72104, R72156, R73118, R73171, R73943, H25904, H27191, H27192, H30471, H72478, H72879, H88214, H98231, W45061, W45071, W49842, W67423, W67424, W93880, W94151, AA023007, AA022473, AA032224, AA032282, AA034411, AA035691, AA040428, AA046861, AA046994, AA046313, AA046139, AA053780, AA101657, AA101658, AA167298, AA227543, AA227684, AA458877, AA459067, AA463656, AA464047, AA464754, AA225370, AA225425, AA225400, AA558796, AA582089, AA565830, AA713907.



		AA864510, AA936117, C01002, N86320, C04277, AA652714, AA402391, AA402565, AA479073, AA621791, AA670200, AA456544, AA676732, AA707089, AI014599, AI022852, AI023739, AI091873, AI094288, Z39517, Z43438
840564	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1068 of SEQ ID NO:441, b is an integer of 15 to 1082, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:441, and where b is greater than or equal to a + 14.	
840572	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1227 of SEQ ID NO:442, b is an integer of 15 to 1241, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:442, and where b is greater than or equal to a + 14.	T87514, T87515, H84879, AA001503, AA506411, AA508167, AA715396, AA931268, AA292666, AA478036, AA478193, AA478194, AA707886, AA724969, AA725050, AA779127, AA843885
840600	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 954 of SEQ ID NO:443, b is an integer of 15 to 968, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:443, and where b is greater than or equal to a + 14.	R38172, AA226748, AA484320, AA831852
840604	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1346 of SEQ ID NO:444, b is an integer of 15 to 1360, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:444, and where b is greater than or equal to a + 14.	
840608	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1821 of SEQ ID NO:445, b is an integer of 15 to 1835, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:445, and where b is greater than or equal to a + 14.	
840620	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1341 of SEQ ID NO:446, b is an integer of 15 to 1355, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:446, and where b is greater than or equal to a + 14.	R17303, R41982, R41982, H43756, N62762, AA053677, AA053697, AA084224, AA084019, AA084952, AA419123, AA419160, AA426014, AA425077, AA427847, AA524035, AA565019, AA632254, AA745726, AA835832, AA931712, AA932520, AA937139, AA961716, AA995607, AA453838, AA455030, AA476981, AA479615, AA482659, AA455837,

		AA488554, AA620470, AA781416, AA844227, AI090902, T19161
840625	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 361 of SEQ ID NO:447, b is an integer of 15 to 375, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:447, and where b is greater than or equal to a + 14.	
840626	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1379 of SEQ ID NO:448, b is an integer of 15 to 1393, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:448, and where b is greater than or equal to a + 14.	
840638	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1649 of SEQ ID NO:449, b is an integer of 15 to 1663, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:449, and where b is greater than or equal to a + 14.	H01158, H01159, H05751, H05858, H83341, H83695, N47512, N47513, W39756, W79733, W90027, W90155, AA047691, AA047741, AA086374, AA100549, AA159315, AA159414, AA282525, AA282633, AA595381, AA688093, AA744757, AA865203, AA933811, AA969838, AA975917, F18424, D12197, D12219, AA478596, AA665540, AA909221, AA969720, AI049820
840649	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1366 of SEQ ID NO:450, b is an integer of 15 to 1380, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:450, and where b is greater than or equal to a + 14.	R00133, R22651, R44356, R44356, R56353, R93194, N47106, N50316, N50780, N55139, AA010596, AA010597, AA012940, AA012888, AA013216, AA013313, AA017544, AA017417, AA047814, AA047792, AA235545, AA262268, AA262879, AA563873, AA570239, AA573586, AA827412, AA862337, AA902472, AA962409, AA971292, AA973596, AI056509, AI080455, AA410833, T23822, T16761
840651	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 912 of SEQ ID NO:451, b is an integer of 15 to 926, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:451, and where b is greater than or equal to a + 14.	
840666	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1628 of SEQ ID NO:452, b is an integer of 15 to 1642, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:452, and where b is greater than or equal to a + 14.	N32778, N34353, N34537, N41780, N42818, N93337, W25190, AA035229, AA035230, AA044070, AA044162, AA195074, AA195174, AA419441, AA731906, AA761315, AA761330, AA766382, AA766593, AA769537, AA805515, AA806516, AA809893, AA814954, AA857917, N44554.

		AA393941, A1074651, T10618, Z35722
840681	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2240 of SEQ ID NO:453, b is an integer of 15 to 2254, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:453, and where b is greater than or equal to a + 14.	
840682	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1917 of SEQ ID NO:454, b is an integer of 15 to 1931, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:454, and where b is greater than or equal to a + 14.	
840684	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 757 of SEQ ID NO:455, b is an integer of 15 to 771, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:455, and where b is greater than or equal to a + 14.	
840697	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1155 of SEQ ID NO:456, b is an integer of 15 to 1169, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:456, and where b is greater than or equal to a + 14.	R00751, R02584, R02703, R69879, R69927, H13156, H29249, H29248, H41216, R83398, H54666, H54667, H73551, H73552, H90468, H91760, H97869, N31729, N31735, N51232, W32147, W32175, W44313, W45660, W57760, W57761, W68386, W68502, W68752, W68835, W72538, W76163, AA035740, AA043246, AA043585, AA044419, AA043053, AA047593, AA047601, AA088798, AA147253, AA155747, AA160105, AA165689, AA172386, AA173747, AA189005, AA189006, AA471066, AA507210, AA513086, AA516406, AA514685, AA635861, AA657400, AA668796, AA737126, AA768005, AA768358, AA887459, AA977176, D80509, D81008, D81471, D81800, D82666, N83795, AA643662, AA284937, AA290823, AA447984, AA448126, AA676807, AA709464, AA780333, AA843801, AA853391, AA868403, AA917460, T17166, T17177, T16671, T48481, T48507
840698	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3235 of SEQ ID NO:457, b is an integer of 15 to 3249, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:457, and where b is	

	greater than or equal to $a + 14$ .	
840708	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1902 of SEQ ID NO:458, b is an integer of 15 to 1916, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:458, and where b is greater than or equal to $a + 14$ .	R21272, R45362, R45362, H06049, H13385, AA082768, AA101114, AA131634, AA131718, AA152290, AA150232, AA418083, AA418230, AA422115, AA424919, AA426139, AA741277, AA749290, AA811505, AA836102, AA411231, AA453804, AA453890, AA758905, AA769817, AA770192, AA904708, AA905158, AA969156, AI093952, Z42470, Z41665, Z44053
840714	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2759 of SEQ ID NO:459, b is an integer of 15 to 2773, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:459, and where b is greater than or equal to $a + 14$ .	
840716	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2017 of SEQ ID NO:460, b is an integer of 15 to 2031, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:460, and where b is greater than or equal to $a + 14$ .	
840721	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1825 of SEQ ID NO:461, b is an integer of 15 to 1839, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:461, and where b is greater than or equal to $a + 14$ .	
840735	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 765 of SEQ ID NO:462, b is an integer of 15 to 779, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:462, and where b is greater than or equal to $a + 14$ .	T47277, T56085, T93319, T85388, H57620, H58465, N77902, N80219, N93978, W19715, W37380, W37643, W38508, W38722, W47048, W68079, W67976, W69349, W69350, AA025313, AA024560, AA063371, AA063370, AA463222, AA463223, AA424422, AA469264, AA480510, AA507733, AA524348, AA557233, AA602394, AA603318, AA631014, AA569554, AA575944, AA688112, AA911131, AA932225, AA937015, AA994856, AI077707, N92552, W00604, C00184, AA292823, AA401683, AA663906, AA664122, AA771943, AA779608, AA812529, AI028120, AI027559, AI032511, AI033880, AI034204, AI078458, AI041685, D31473, T64469
840738	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	

	sequence described by the general formula of a-b, where a is any integer between 1 to 1703 of SEQ ID NO:463, b is an integer of 15 to 1717, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:463, and where b is greater than or equal to a + 14.	
840745	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 814 of SEQ ID NO:464, b is an integer of 15 to 828, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:464, and where b is greater than or equal to a + 14.	
840747	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1159 of SEQ ID NO:465, b is an integer of 15 to 1173, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:465, and where b is greater than or equal to a + 14.	
840756	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 507 of SEQ ID NO:466, b is an integer of 15 to 521, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:466, and where b is greater than or equal to a + 14.	AA074254
840776	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1414 of SEQ ID NO:467, b is an integer of 15 to 1428, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:467, and where b is greater than or equal to a + 14.	T47069, T47068, T63511, T63587, T79637, T79722, R36141, R36419, R65831, R65934, R69612, R69701, H00464, H00514, H04572, H04575, H12602, H12652, H13166, H66218, H67195, H67868, H67868, N62959, W92249, W92250, W92609, W95234, AA007598, AA193373, AA195360, AA195359, AA425046, AA430627, AA428172, AA484871, AA557201, AA902998, AA927360, N79862, AA479674, AA477192, AA481418, AA481651, AA495983, AA496377, AA496655, AA912146, AA912181, AI049805, AA693485
840784	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3449 of SEQ ID NO:468, b is an integer of 15 to 3463, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:468, and where b is greater than or equal to a + 14.	
840788	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 607 of SEQ ID	

	NO:469, b is an integer of 15 to 621, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:469, and where b is greater than or equal to a + 14.	
840794	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1819 of SEQ ID NO:470, b is an integer of 15 to 1833, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:470, and where b is greater than or equal to a + 14.	
840797	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3188 of SEQ ID NO:471, b is an integer of 15 to 3202, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:471, and where b is greater than or equal to a + 14.	
840799	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 927 of SEQ ID NO:472, b is an integer of 15 to 941, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:472, and where b is greater than or equal to a + 14.	
840818	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1265 of SEQ ID NO:473, b is an integer of 15 to 1279, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:473, and where b is greater than or equal to a + 14.	
840822	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3195 of SEQ ID NO:474, b is an integer of 15 to 3209, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:474, and where b is greater than or equal to a + 14.	T47621, T77305, T83423, R18484, R51973, R51974, R73192, H06082, H12940, H27135, H45895, H45904, N72089, W00342, W52213, W96404, AA045488, AA058907, AA062768, AA069032, AA081439, AA082427, AA084417, AA101216, AA234022, AA534011, AA565390, AA588319, AA588430, AA568701, AA635907, AA579930, AA827039, AA857519, AA872490, AA904077, AA995057, A1073336, N95359, C15883, AA781445, AA906492, A1037943, A1039428
840830	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 819 of SEQ ID NO:475, b is an integer of 15 to 833, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:475, and where b is	N33920, N33932, N49642, N49629, AA508747, AA514767, AA583465, AA805203, AA878968, U37231, T24573

	greater than or equal to $a + 14$ .	
840846	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1127 of SEQ ID NO:476, b is an integer of 15 to 1141, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:476, and where b is greater than or equal to $a + 14$ .	T68706, T68719, T68771, T68784, T73424, T73431, T73486, T73492, T73499, T73535, T89865, R11465, T79345, T79774, T81799, T82119, T82855, T96198, T96454, T96686, T96802, T96920, T97027, T99996, T99997, R00156, R00157, R83404, R85816, R91357, R93314, R94713, R94794, R97348, R99024, R99798, H48280, H48369, H48754, H54738, H54739, H55985, H55984, H56050, H56244, H57662, H57872, H57873, H58502, H60170, H60211, H62933, H69203, H69228, H69229, H71630, H73011, H73012, H81193, H81194, H90826, H91385, N33963, N49672, N49822, N52577, N54836, N58435, N64440, N66934, N69249, N69373, N74062, N75759, N78025, N78145, N94249, N95116, W03303, W01169, W01912, N91401, AA025243, AA026028, AA193126, AA194255, AA236507, AA242995, AA622239, AA575858, AA575872, AA576026, AA576150, AA576597, AA864932, AA877934, AA969761, AA994970, AI017867, D82634, C21067, AA431221, AA779655, AA782374, AA812640, AA923315, AA962377, AA993251, AI018445, AI025584, AI092470, T79311
840848	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1088 of SEQ ID NO:477, b is an integer of 15 to 1102, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:477, and where b is greater than or equal to $a + 14$ .	R10066, R10163, T26606, R61067, R72646, H08322, H47858, H47859, R86048, H68866, H68867, H69098, H82364, N58491, N78080, W52876, W60083, AA043086, AA045865, AA045866, AA055712, AA057298, AA058743, AA079887, AA079888, AA099233, AA099234, AA102153, AA113213, AA115932, AA121000, AA131067, AA143412, AA146598, AA155632, AA155688, AA160447, AA173257, AA173248, AA195987, AA196375, AA233537, AA463552, AA503072, AA551794, AA586410, AA594814, AA613123, AA573356, AA580449, AA731195, AA742856, AA827930, AA863440, AA865529, AA876847, AA953614, AA976924, N84278, N88762, C17112, AA219765, AA284503, AA293437, AA293046, AA669435, AA722103, AI027785, AI073617, AI092707, T17392, F08770, D12026
840860	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	T89645, T89919, T93704, R21871, R22387, R78094, R78181, R78515,

	<p>sequence described by the general formula of a-b, where a is any integer between 1 to 4187 of SEQ ID NO:478, b is an integer of 15 to 4201, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:478, and where b is greater than or equal to a + 14.</p>	<p>R78560, H40124, H41731, N28359, N42893, N62851, N64787, N67463, N76199, N77065, N77758, W67341, W68381, AA034244, AA044935, AA045056, AA057392, AA057684, AA071214, AA071442, AA081937, AA082360, AA082229, AA082230, AA082708, AA083297, AA083188, AA127585, AA149575, AA151791, AA167113, AA173360, AA191227, AA195437, AA223329, AA223614, AA243268, AA261939, AA262815, AA262816, AA422160, AA426276, AA225924, AA504466, AA504634, AA522823, AA554566, AA632813, AA576873, AA662886, AA730326, AA748669, AA828942, AA837197, AA857065, AA857683, AA862276, AA864246, AA873317, A1083733, D82604, D82635, N81179, N85023, N85166, N85712, C00193, C00199, C02425, N87331, N88683, N88852, N89408, C02916, C05151, C06382, AA642209, C21319, AA091285, AA091688, AA094300, AA205974, AA206268, AA206598, AA205324, AA649340, AA247212, AA404505, AA421263, AA421361, D11545, AA441853, AA441826, AA463350, AA463858, AA487271, AA487388, AA496439, AA496488, AA634627, AA663685, AA665466, AA456144, AA722996, AA772136, AA772153, AA774179, AA992418, A1076734, T10506, Z30218, Z38961, T16262, T48571, D31110, D45597, F06042, F00682</p>
840861	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 773 of SEQ ID NO:479, b is an integer of 15 to 787, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:479, and where b is greater than or equal to a + 14.</p>	<p>T52180, T52256, T57048, T60934, T60993, T94137, T94228, T91060, T85924, R23216, R23292, R31316, R31576, R62640, R62693, H03198, H18231, H18269, H22414, H26112, H26116, H26378, H40754, H38895, H47721, H48072, R89134, R89141, R91829, R91836, R98452, H65626, H65627, H69728, H71913, H71914, H78844, H80090, H83062, H84585, H87467, H87577, H93457, H93458, N23179, N30549, N32644, N39052, N40455, N48060, N48244, N53258, N53755, N63557, N94559, N94883, N94981, N95791, N42987, W19445, W19573, W23831, W24902, W30850, W32700, W32701, W37523, W56867, W60497, W60972, W61219, W69268, W69346, W80426, W80556, W94817, W95832, W95966, W96035, W96092,</p>



		N90310, AA010147, AA010148, AA025440, AA025757, AA027347, AA027822, AA027874, AA029650, AA029651, AA037779, AA039260, AA046801, AA046818, AA054707, AA058654, AA062684, AA063287, AA074876, AA074979, AA084381, AA085264, AA085328, AA085598, AA122190, AA120978, AA133892, AA129630, AA172403, AA172206, AA190489, AA190525, AA464455, AA464996, AA225769, AA259210, AA483109, AA483741, AA493542, AA502162, AA516183, AA522567, AA526813, AA557654, AA588882, AA593799, AA576216, AA659530, AA662308, AA688246, AA688254, AA687457, AA687516, AA689236, AA728852, AA729032, AA747479, AA747979, AA831447, AA887348, AA903105, AA916516, AA934714, AA953363, AA976759, AA991410, AA991434, A1002147, A1028033, N83338, C02469, R29174, AA090669, AA092066, AA648634, AA443968, AA444149, AA482243, AA482340, AA485406, AA598458, AA644566, AA664032, AA680199, AA676482, AA629708, AA630110, AA457100, AA431269, AA405296, AA405332, AA721997, AA724146, AA774657, AA781529, AA781641, AA781838, AA782849, AA813171, AA843229, AA846744, AA846814, AA854299, AA854765, AA789029, AA993047, A1023973, A1027725, A1031943, A1038463, A1041602, A1085085, A1086504, A1088189
840871	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 717 of SEQ ID NO:480, b is an integer of 15 to 731, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:480, and where b is greater than or equal to a + 14.	H42821, AA028094, AA099211, AA160368, AA223572, AA232552, AA252811
840874	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1105 of SEQ ID NO:481, b is an integer of 15 to 1119, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:481, and where b is greater than or equal to a + 14.	
840878	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b,	T40405, T41252, T47240, T47241, T50233, T52891, T57110, T58359, R19508, R43858, R43858, R75598.

	where a is any integer between 1 to 2042 of SEQ ID NO:482, b is an integer of 15 to 2056, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:482, and where b is greater than or equal to a + 14.	R75665, H13192, H13193, N25264, N31900, N42683, N72995, N93388, W25360, W47628, W47629, AA009691, AA009410, AA045777, AA045910, AA063040, AA063076, AA130044, AA149205, AA149206, AA191678, AA252698, AA464304, AA225264, AA514845, AA526726, AA548411, AA548704, AA552050, AA552558, AA568675, AA827017, AA834447, AA838450, AA886357, AA886653, AA887879, AA916602, AA928685, AA968793, A1005016, W28859, AA134038, AA455118, AA496380, AA496656, AA598830, AA653270, AA725217, AA733068, A1004394, A1023815, A1026954, A1040891, Z25388, Z28470, AA702322
840880	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 873 of SEQ ID NO:483, b is an integer of 15 to 887, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:483, and where b is greater than or equal to a + 14.	H02306, H02418, N48196, N53344, AA059013, AA506159, AA613938, AA662759, AA976725, AA854631
840884	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1864 of SEQ ID NO:484, b is an integer of 15 to 1878, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:484, and where b is greater than or equal to a + 14.	
840907	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1552 of SEQ ID NO:485, b is an integer of 15 to 1566, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:485, and where b is greater than or equal to a + 14.	
840926	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3032 of SEQ ID NO:486, b is an integer of 15 to 3046, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:486, and where b is greater than or equal to a + 14.	
840932	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1890 of SEQ ID NO:487, b is an integer of 15 to 1904, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:487, and where b is	

	greater than or equal to $a + 14$ .	
840940	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 813 of SEQ ID NO:488, b is an integer of 15 to 827, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:488, and where b is greater than or equal to $a + 14$ .	
840947	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1912 of SEQ ID NO:489, b is an integer of 15 to 1926, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:489, and where b is greater than or equal to $a + 14$ .	
840959	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1447 of SEQ ID NO:490, b is an integer of 15 to 1461, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:490, and where b is greater than or equal to $a + 14$ .	
840964	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 791 of SEQ ID NO:491, b is an integer of 15 to 805, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:491, and where b is greater than or equal to $a + 14$ .	R79226, H12332, H51062, H83364, H89523, N27508, N30527, N40233, N52503, N53855, N94367, AA055215, AA055306, AA188169, AA468498, AA470473, AA563662, AA622643, AA579613, AA668790, AA748160, AA765447, AA873430, AA879079, AA903275, AA970424, N73354, AA402259, AA883758, AA890505, AA906005, A1023931
840979	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2255 of SEQ ID NO:492, b is an integer of 15 to 2269, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:492, and where b is greater than or equal to $a + 14$ .	
840984	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4094 of SEQ ID NO:493, b is an integer of 15 to 4108, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:493, and where b is greater than or equal to $a + 14$ .	
840986	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2195 of SEQ ID NO:494, b is an integer of 15 to 2209, where both a and b correspond to the positions of nucleotide	H25393, H25394, H25511, H25512, R95750, R95794, H64076, H64131, H68715, H80548, H80604, H94681, H95039, H99481, N28293, N30167, N35782, W47389, W47262, W61304, W65368, AA054346, AA054383.

	residues shown in SEQ ID NO:494, and where b is greater than or equal to a + 14.	AA058320, AA058448, AA512954, AA558416, AA588459, AA935690, AI097565, N87339, AA993027, AA993568, AA701454, AA702350
840988	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1663 of SEQ ID NO:495, b is an integer of 15 to 1677, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:495, and where b is greater than or equal to a + 14.	T87048, R24473, R43337, R43337, N75007, W05750, AA182467, AA227466, AA504464, AA504538, AA923479, AA648887, AA663889, AI027636, AI028506, AI026720, Z42717
840990	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1688 of SEQ ID NO:496, b is an integer of 15 to 1702, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:496, and where b is greater than or equal to a + 14.	
840992	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2362 of SEQ ID NO:497, b is an integer of 15 to 2376, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:497, and where b is greater than or equal to a + 14.	
841009	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 826 of SEQ ID NO:498, b is an integer of 15 to 840, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:498, and where b is greater than or equal to a + 14.	T40334, T41195, T79150, T79231, T85615, T98895, T99485, R25796, H03311, H03312, H11314, H21245, R91754, R91755, R93025, R97834, R97886, R99577, R99583, R99683, R99689, H88057, H97799, H97870, N34019, N35363, N42786, N44738, N52502, N70158, N72884, N74746, N93542, N95357, N98354, W01181, W03108, W15165, W19587, W21350, W24700, W24805, W39226, W48682, W49637, W49739, W51977, W67546, W67528, W67665, W79731, W93828, W93829, AA025348, AA025356, AA024401, AA024402, AA029589, AA029588, AA099331, AA099865, AA121627, AA126717, AA126816, AA126817, AA133155, AA165162, AA165163, AA557332, AA640015, AA579505, AA665011, AA665221, AA738009, AA830748, AA918150, AA918992, AA947223, AA974955, AI083731, N56157, N89240, AA092060, AA094384, AA650291, AA292814, AA402491, F20671, F21115, D11655, D11564, D11605, D12048, AA634049, U54738, AA732766, AA782030, AA843638, AA860477, AA861482, AI018649,

		AI092171, Z28714, T23956, AA694568
841012	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 447 of SEQ ID NO:499, b is an integer of 15 to 461, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:499, and where b is greater than or equal to a + 14.	
841016	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2768 of SEQ ID NO:500, b is an integer of 15 to 2782, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:500, and where b is greater than or equal to a + 14.	R21854, R21868, R23349, R27518, R63726, R63775, R65731, R65957, R65958, R66192, R66977, R66978, R67072, R69600, R69690, H12415, H12416, N46541, N47260, N47778, N48572, N51984, N95008, W25613, W31713, W32142, W38029, W38650, W38655, AA034256, AA037658, AA037660, AA039268, AA042908, AA042921, AA063533, AA126558, AA130121, AA130157, AA137270, AA136020, AA232954, AA233044, AA429346, AA429872, AA565520, AA604780, AA610435, AA631349, AA631518, AA740206, AA770618, AA912228, AI079705, N84191, N85956, N92894, W38030, C00380, N83173, C03262, AA092010, U82782, AA247592, AA284977, AA283619, AA291890, AA293636, AA410312, AA410537, AA453566, AA487623, AA626442, AA628932, AA629190, AA629753, AA629916, AA719528, AA843073, AA844228, AA890492, AI024670, AI051881, AI061324, T11149
841017	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1235 of SEQ ID NO:501, b is an integer of 15 to 1249, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:501, and where b is greater than or equal to a + 14.	R21764, R21815, N71125, W17312, AA112660, AA179538, AA179507, AA902202, AA907419, AA913594, AA994481, AI049652
841021	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1344 of SEQ ID NO:502, b is an integer of 15 to 1358, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:502, and where b is greater than or equal to a + 14.	R23836, W38704, AA033686, AA176734, AA192268, AA525913, AA531505, AA532666, AA533781, AA533827, AA533949, AA554396, AA576754, AA906883, N24273, C14272, C14285, C14286, C18998
841032	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 487 of SEQ ID NO:503, b is an integer of 15 to 501, where both a and b correspond to the positions of nucleotide	T41136, T52990, T52991, T61494, T63001, T63145, T87321, T87328, T89480, T84361, R05264, N75935, W05120, W25352, AA191627, AA258512, AA418549, AA224774, AA225253, AA229538, AA229537,

	residues shown in SEQ ID NO:503, and where b is greater than or equal to a + 14.	AA229951, AA230318, AA468106, AA468170, AA482814, AA482855, AA482894, AA482906, AA483676, AA491563, AA491627, AA492175, AA501375, AA502205, AA505498, AA508058, AA508125, AA512979, AA513165, AA523347, AA528170, AA531497, AA542840, AA551430, AA553992, AA554420, AA582164, AA583205, AA593192, AA593362, AA602125, AA603378, AA603728, AA617691, AA622865, AA630937, AA631991, AA570802, AA569520, AA654990, AA664728, AA664864, AA665278, AA729616, AA729639, AA729652, AA730512, AA730705, AA730910, AA737300, AA737303, AA736808, AA736909, AA738098, AA740165, AA740553, AA742574, AA742885, AA746988, AA747057, AA747094, AA747099, AA747961, AA748108, AA804727, AA805835, AA834105, AA838466, AA864527, AA872303, AA875939, AA876612, AA876936, AA879219, AA885735, AA886033, AA888159, AA888528, AA888683, AA903652, AA935001, AA948734, AA947836, AA978250, AA994661, AI073926, AI085517, N83676, N86451, N87989, AA642538, AA090432, AA090481, AA092225, AA091643, AA094678, AA094818, AA095214, AA648652, AA649783, AA650377, AA401641, F21163, AA411822, AA442212, AA609798, AA679909, F22052, AA679265, AA722456, AI003421, AI028430, AI077884, AI086743, T89286, R05321, AA694044
841051	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1997 of SEQ ID NO:504, b is an integer of 15 to 2011, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:504, and where b is greater than or equal to a + 14.	AA427363
841064	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1975 of SEQ ID NO:505, b is an integer of 15 to 1989, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:505, and where b is greater than or equal to a + 14.	R95695, H49073, H61707, H61911, H68517, H89719, H89781, H89828, H90680, N76870, W88654, W88898, AA046748, AA053076, AA053592, AA127256, AA127257, AA187351, AA188218, H67307, AA602545, AA720701, AA742288, N87596, AA094084, AA204976, AA676787, AA703221, AA779414, AI038609, AI074626, AI088527, T17364,

		AA702787
841069	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1071 of SEQ ID NO:506, b is an integer of 15 to 1085, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:506, and where b is greater than or equal to a + 14.	
841072	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1471 of SEQ ID NO:507, b is an integer of 15 to 1485, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:507, and where b is greater than or equal to a + 14.	
841078	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1916 of SEQ ID NO:508, b is an integer of 15 to 1930, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:508, and where b is greater than or equal to a + 14.	T39937, T68962, T84426, R20697, R36425, R45643, R45643, R68137, R70943, R70957, R70996, R71011, H02222, H05658, H05659, H25177, H29362, H54732, H54733, H60311, H60310, H77561, H77562, H78245, H78446, H82436, H82699, N20477, N57742, N59418, N59709, N76617, AA029237, AA055009, AA055434, AA236337, AA425703, AA427773, AA482193, AA482287, AA612777, AA729757, AA737276, AA744359, AA872776, AA972581, C06045, AA446583, AA449748, AA707197, AA757691, AA774691, AA992571, A1003756, A1027513, A1039704, A1042272, A1052652, A1077380, A1083949, AA774036
841080	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1120 of SEQ ID NO:509, b is an integer of 15 to 1134, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:509, and where b is greater than or equal to a + 14.	
841088	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1368 of SEQ ID NO:510, b is an integer of 15 to 1382, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:510, and where b is greater than or equal to a + 14.	R00895, R21561, R42090, R42090, H05080, N79589, N94381, W16578, W42724, W42813, W46346, W46347, W47346, W57707, W57783, AA070469, AA490938, AA586820, AA580196, AA745683, AA809239, AA931405, D11601, AA725448, AA992145, A1023735, A1025359, A1031575, A1033697, A1038145, A1093535, F00072
841092	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1727 of SEQ ID	

	NO:511, b is an integer of 15 to 1741, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:511, and where b is greater than or equal to a + 14.	
841095	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1516 of SEQ ID NO:512, b is an integer of 15 to 1530, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:512, and where b is greater than or equal to a + 14.	W20114, AA255840, AA568302, AA406006, AA434170
841096	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2985 of SEQ ID NO:513, b is an integer of 15 to 2999, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:513, and where b is greater than or equal to a + 14.	
841102	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2034 of SEQ ID NO:514, b is an integer of 15 to 2048, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:514, and where b is greater than or equal to a + 14.	
841104	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3286 of SEQ ID NO:515, b is an integer of 15 to 3300, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:515, and where b is greater than or equal to a + 14.	T93851, R05295, R05354, R71097, R71445, R99396, N53129, W38359, W38417, W38418, W39384, W44785, W44786, W69719, W69847, W73703, AA134718, AA164646, AA164647, AA418958, AA420439, AA420440, AA548241, AA548224, AA558195, W73847, Z19840, AA707354, AA868898, AA917430, A1073454, F09131, F11469, AA700476
841108	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3411 of SEQ ID NO:516, b is an integer of 15 to 3425, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:516, and where b is greater than or equal to a + 14.	T89709, T89806, T91163, T93774, T93819, T95226, R06420, R06475, R23277, R23370, R32742, R32743, R52354, R52355, R64095, R64184, R65984, R65985, R70225, R70226, R76344, R76672, R80205, H00679, H00770, H04254, H24758, H24803, H40273, H38053, H38054, H47116, H47210, R92478, R94873, R94872, H57866, H57867, H59353, H61105, H63261, H63535, H63938, H67759, H67760, H77384, H77385, H82932, H87435, H87541, H88753, H88754, N59081, N59489, N63682, N63939, N66851, N70709, N92122, N99845, W32595, W88585, W90769, W90327, W93082, W93137, AA025425, AA041232, AA114914, AA114913, AA128525, AA235362, AA235944,



		AA235945, AA425197, AA636023, AA639557, AA729723, AA907495, A1056355, A1089809, AA448599, AA449742, AA476262, AA478567, AA478700, AA599706, AA634117, AA677126, AA716562, AA923333, AA948589, A1051569, A1073816, A1074666, A1080341, A1084428, A1090962, A1096407
841118	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1344 of SEQ ID NO:517, b is an integer of 15 to 1358, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:517, and where b is greater than or equal to a + 14.	R20815, R36529, R38448, R46586, R46586, R71122, R71625, R77658, R80438, R80643, H12595, H12644, H99733, N20132, N25939, N29738, N57157, N59874, N67154, N67834, W03438, W04625, W31524, AA044199, AA044996, AA135739, AA135782, AA146912, AA146911, AA173589, AA224431, AA232224, AA256600, AA256599, AA419270, AA419321, AA425195, AA484744, AA507823, AA513832, AA584296, AA600955, AA614813, AA807248, AA904059, AA937796, AA973678, AA983325, AA991604, W01284, C16969, AA476260, AA476318, AA476367, AA609550, AA678511, AA722726, AA904676, AA954468, A1001869, A1031538, Z41297
841119	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1354 of SEQ ID NO:518, b is an integer of 15 to 1368, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:518, and where b is greater than or equal to a + 14.	R18472, W39766, AA076303, AA985235
841124	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 919 of SEQ ID NO:519, b is an integer of 15 to 933, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:519, and where b is greater than or equal to a + 14.	
841137	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1416 of SEQ ID NO:520, b is an integer of 15 to 1430, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:520, and where b is greater than or equal to a + 14.	T65560, R52978, R59392, H24368, H25185, N33308, AA016160, AA019434, AA082036, AA099724, AA099725, AA101466, AA100553, AA100634, AA100635, AA143046, AA150250, AA151129, AA165491, AA172129, AA176104, AA176248, AA176272, AA197310, AA227454, AA232220, AA243156, AA261904, AA262541, AA458854, AA459044, AA481155, AA493247, AA514323, AA522820, AA558368, AA582973, AA604489, AA640528, AA569125.

		AA569824, AA737640, AA743846, AA808232, AA812222, AA847813, AA865060, AA872242, AA872353, AA922866, AA933823, AA988358, AI056397, AI085865, AI088865, AA205921, AA205923, AA205997, AA204887, AA205731, D11887, AA634040, AA703823, AA703893, Z20424, AA707344, AA707416, AA716243, AA683201, AA890456, AI003274, AI076618, AI090177, T10877, Z28746, T25145, Z40353, F11026, F09670, AA699695, AA701137
841143	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1155 of SEQ ID NO:521, b is an integer of 15 to 1169, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:521, and where b is greater than or equal to a + 14.	T52948, T57468, T59332, T91403, T84637, R69314, R69315, R77481, R77675, R77676, H30692, H70576, N24036, N24905, N26173, N35858, N36029, W39771, W45303, W80648, W80649, AA029895, AA029983, AA036639, AA036850, AA043430, AA043431, AA046109, AA046196, AA076106, AA076107, AA083131, AA083181, AA083285, AA083293, AA147761, AA147804, AA155831, AA155741, AA430082, AA581553, AA593886, AA594233, AA604399, AA576339, AA715836, AA730946, AA737298, AA768251, AA872423, AA888276, AA961744, AA962699, AA975874, AI000132, R29417, AA640954, AA094702, AA398483, AA402600, AA489817, AA489948, AA496290, AA663953, AA663986, AA725581, AA771972, AA781165, AA845829, AA772618, AA773208, AA907551, AI003883, AI004593, AI031669, AI052123, AI085380
841148	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2148 of SEQ ID NO:522, b is an integer of 15 to 2162, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:522, and where b is greater than or equal to a + 14.	
841149	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 785 of SEQ ID NO:523, b is an integer of 15 to 799, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:523, and where b is greater than or equal to a + 14.	AA812937
841151	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b.	

	where a is any integer between 1 to 1708 of SEQ ID NO:524, b is an integer of 15 to 1722, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:524, and where b is greater than or equal to a + 14.	
841155	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 548 of SEQ ID NO:525, b is an integer of 15 to 562, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:525, and where b is greater than or equal to a + 14.	
841161	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2009 of SEQ ID NO:526, b is an integer of 15 to 2023, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:526, and where b is greater than or equal to a + 14.	H81836, AA015599, AA099033, AA099034, AA211818, AA741499, AA748367, AA768854, AA805297, AA804217, A1000120, A1090415, D79280, D79875, AA628397, AA628438, AA889584, Z36757
841162	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2833 of SEQ ID NO:527, b is an integer of 15 to 2847, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:527, and where b is greater than or equal to a + 14.	T54529, T54568, T39916, T40885, T64421, T64740, T94433, T94519, T94763, T94764, T67443, T67536, T69533, R08782, R08783, T84049, T86084, R18023, R19657, R33054, R33948, R52119, R52216, R53248, R53249, R71311, H04393, H04418, H23196, H23309, H47118, R95161, H54791, H54843, H66487, H66488, H87522, H87523, H92220, H97204, H97637, H98041, N25008, N27036, N32850, N32940, N41677, N41803, N52911, N55243, N55603, N59425, N62367, N67146, N67527, N68040, N68109, N69439, N79136, W03264, W02511, W16533, W16511, W16949, W19590, W20032, W25683, W56022, W57870, W58141, W84752, W84757, W96458, W96558, N89892, N91494, AA035714, AA040577, AA040675, AA043889, AA052991, AA053277, AA053702, AA062923, AA063530, AA074314, AA074909, AA074744, AA076274, AA098982, AA099025, AA146894, AA146893, AA160127, AA160126, AA160195, AA160196, AA169764, AA169385, AA179301, AA223348, AA233558, AA235471, AA460676, AA420533, AA506563, AA523418, AA527621, AA528362, AA531060, AA532619, AA541282, AA552184, AA564466, AA564790, H98795, AA583450, AA613483, AA622733, AA627809, AA577550, AA578980, AA579413, AA714153, AA721494, AA721786, AA737104.

		AA738062, AA745852, AA746662, AA748113, AA814512, AA814515, AA848156, AA858182, AA877787, AA886219, AA886814, AA908510, AA919073, AA953828, AA971838, AA974669, AA974937, AA975070, AA978156, AA985412, AA985429, AA989103, AA989168, AA975750, AI053418, AI053736, AI053892, AI053967, AI053988, AI054073, AI054111, F18748, AI096767, WI6689, F17979, W26593, W74635, R29761, AA090571, AA090284, AA092279, AA092676, AA174176, AA206002, AA206857, AA206939, AA204847, AA204862, AA205665, AA205777, C17805, AA215924, AA284942, AA285094, AA292514, AA293872, AA398296, AA401676, AA412021, AA450108, AA450173, AA477960, AA478675, AA479216, AA482218, AA608548, AA634838, AA634910, AA634951, AA644321, AA664196, AA665979, AA668238, AA668579, AA669764, AA669856, AA676279, AA630300, Z20366, AA716371, AA716380, Z19906, AA777040, AA778451, AA781061, AA845834, T25435, Z21568, AA772588, AA917780, AI003327, AI016140, AI024969, AI032559, AI056850, AI088269, AI090536, AI092597, AI093387, T15364, D29035, T27400, T27473, F02321, F06069, T69476, AA773898, AA694154
841163	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 802 of SEQ ID NO:528, b is an integer of 15 to 816, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:528, and where b is greater than or equal to a + 14.	T70512, W58177, W58266, AA027003, AA047260, AA057146, AA076110, AA150122, AA150030, AA424246, AA425670, AA523788, AA554661, AA582491, AA587000, AA633476, AA578397, AA662364, AA687611, AA729856, AA741041, AA806947, AA894899, AA922687, AA934486, AA946779, AA954606, AA962108, AA988276, AI054171, AA436000, AA436099, AA442324, AA451996, AA722958, AA780203, T25797, AI018410, AI024726, AI074321
841169	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 871 of SEQ ID NO:529, b is an integer of 15 to 885, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:529, and where b is greater than or equal to a + 14.	
841172	Preferably excluded from the present invention are	T47968, H14181, H26893, N40884,

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 728 of SEQ ID NO:530, b is an integer of 15 to 742, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:530, and where b is greater than or equal to a + 14.	Z42735
841174	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 511 of SEQ ID NO:531, b is an integer of 15 to 525, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:531, and where b is greater than or equal to a + 14.	
841179	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1911 of SEQ ID NO:532, b is an integer of 15 to 1925, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:532, and where b is greater than or equal to a + 14.	
841183	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 488 of SEQ ID NO:533, b is an integer of 15 to 502, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:533, and where b is greater than or equal to a + 14.	
841186	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1786 of SEQ ID NO:534, b is an integer of 15 to 1800, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:534, and where b is greater than or equal to a + 14.	
841204	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2483 of SEQ ID NO:535, b is an integer of 15 to 2497, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:535, and where b is greater than or equal to a + 14.	
841206	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4076 of SEQ ID NO:536, b is an integer of 15 to 4090, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:536, and where b is greater than or equal to a + 14.	
841207	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide	AA215286

	sequence described by the general formula of a-b, where a is any integer between 1 to 572 of SEQ ID NO:537, b is an integer of 15 to 586, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:537, and where b is greater than or equal to a + 14.	
841211	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1236 of SEQ ID NO:538, b is an integer of 15 to 1250, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:538, and where b is greater than or equal to a + 14.	
841225	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1336 of SEQ ID NO:539, b is an integer of 15 to 1350, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:539, and where b is greater than or equal to a + 14.	
841229	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2495 of SEQ ID NO:540, b is an integer of 15 to 2509, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:540, and where b is greater than or equal to a + 14.	
841237	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1729 of SEQ ID NO:541, b is an integer of 15 to 1743, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:541, and where b is greater than or equal to a + 14.	H39746, H38765, H53680, H84385, H84386, H95751, H96427, H96428, N22709, N24033, N27417, N27531, N31183, N34699, N35427, N40348, N46995, N47385, W47664, W52613, W58021, AA020909, AA032219, AA032277, AA036745, AA053732, AA055872, AA057318, AA062713, AA070398, AA134055, AA132315, AA132625, AA149601, AA149602, AA494458, AA516430, AA534386, AA582804, AA581987, AA588838, AA631158, AA635970, AA577392, AA577494, AA857008, AA894813, AA933084, AI000994, N47386, D11495, D11593, D12071, D11877, D11882, D11902, AA456436, AA683214, AA890528, AA983938, AI074406, AI084728
841241	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2196 of SEQ ID NO:542, b is an integer of 15 to 2210, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:542, and where b is greater than or equal to a + 14.	T64820, R18486, R48571, R48670, R51358, R51464, R70428, R71854, R77389, R77390, H18251, H18293, H18401, H18402, H19764, H19765, H21210, H21526, H24560, H25150, H26985, H28104, H30240, H30297, H30868, H30871, H40890, H41878, H41879, H43721, H43811, H43814.

		R84543, R85932, R87323, R93828, H49042, H49101, H51175, H51188, H68511, H75818, H80551, H80607, N41005, N45017, N56601, N70611, N74891, N93043, N93044, N94350, N98497, W04932, W21511, W21512, W24020, W31043, W47411, W47607, W47659, W47660, W48851, W48618, W52281, W56619, W56649, W68334, W68375, W70156, W70195, W84467, W84552, W90400, W94826, W96342, W96343, N91167, AA016293, AA017674, AA025151, AA025152, AA027955, AA031264, AA031395, AA031855, AA031854, AA035782, AA037318, AA040025, AA056359, AA069269, AA069418, AA069509, AA101608, AA114873, AA114837, AA115697, AA133516, AA220968, AA458530, AA460966, AA463596, AA419091, AA428836, AA507951, AA582836, AA640114, AA659114, AA836669, AA903136, AA903220, AA918099, AA928492, AA971856, AA973427, AA994099, A1016016, A1057267, AA069497, AA206877, AA218868, AA284783, AA284712, AA293434, AA293042, AA402851, AA454608, AA496283, AA609652, AA708123, AA757619, AA757695, AA774425, AA774630, AA775465, AA852435, AA852436, AA852604, AA852605, AA868271, AA884190, T03362, A1042345, A1042606, A1066399, A1086541, A1086967, A1091380, A1091725, A1092820, A1092945, T23722, F03416, F04814, F07127, F08608, F12341
841259	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1701 of SEQ ID NO:543, b is an integer of 15 to 1715, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:543, and where b is greater than or equal to a + 14.</p>	
841260	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3095 of SEQ ID NO:544, b is an integer of 15 to 3109, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:544, and where b is greater than or equal to a + 14.</p>	T93673, R01175, R01287, R72262, R72263, H53584, H53905, N57686, N59657, N63715, N98804, W86302, W86653, W87312, AA055614, AA058962, AA058961, AA149239, AA180323, AA460554, AA460555, AA492261, AA596073, AA604012, AA612811, AA617927, AA631804, AA767954, AA769298, AA804811, AA814647, AA833776, AA872768, AA873458, AA876551, AA886069.

		AA932445, AA976417, AA989268, AI055853, D80933, AI088938, AI096484, AA215901, AA393250, AA435612, AA449044, AA449758, AA653318, AA678103, AA678744, AA705036, AA854081, AA789188, AA813062, AA868902, AI023192, AI033456, AI090508, Z28555, T25877, D30980, D31048, D31377, F00724, AA682530, AA694353
841264	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1162 of SEQ ID NO:545, b is an integer of 15 to 1176, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:545, and where b is greater than or equal to a + 14.	
841275	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1721 of SEQ ID NO:546, b is an integer of 15 to 1735, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:546, and where b is greater than or equal to a + 14.	
841311	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1034 of SEQ ID NO:547, b is an integer of 15 to 1048, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:547, and where b is greater than or equal to a + 14.	
841313	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 722 of SEQ ID NO:548, b is an integer of 15 to 736, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:548, and where b is greater than or equal to a + 14.	
841317	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2217 of SEQ ID NO:549, b is an integer of 15 to 2231, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:549, and where b is greater than or equal to a + 14.	T78127, R31279, R31890, R38014, R68187, R68186, R68960, R81444, R81647, H03085, H42975, N22228, N35405, N40226, N52138, N66461, N66470, W48764, W49783, W58388, AA044222, AA044341, AA131687, AA131731, AA224224, AA224527, AA469092, AA580878, AA573581, AA863153, AA903745, AA971415, C03879, AA249392, AA448556, AA449703, F22605, AA723322, AA904943, Z18868, AA971554, AA991799, AI015846, AI037913, AI056007, AI082497, AI090170, AI095394



841322	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1802 of SEQ ID NO:550, b is an integer of 15 to 1816, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:550, and where b is greater than or equal to a + 14.</p>	<p>R21970, R83459, H65911, W76286, AA182592, AA281797, AA281874, AA291943, H65824, AA580660, AA748474, AA829390, AA293389, AA401755, AA910004, AA994494, A1005165, A1081877</p>
841331	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2596 of SEQ ID NO:551, b is an integer of 15 to 2610, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:551, and where b is greater than or equal to a + 14.</p>	
841332	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 4007 of SEQ ID NO:552, b is an integer of 15 to 4021, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:552, and where b is greater than or equal to a + 14.</p>	
841338	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1766 of SEQ ID NO:553, b is an integer of 15 to 1780, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:553, and where b is greater than or equal to a + 14.</p>	
841345	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3699 of SEQ ID NO:554, b is an integer of 15 to 3713, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:554, and where b is greater than or equal to a + 14.</p>	
841349	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1983 of SEQ ID NO:555, b is an integer of 15 to 1997, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:555, and where b is greater than or equal to a + 14.</p>	
841355	<p>Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 892 of SEQ ID NO:556, b is an integer of 15 to 906, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:556, and where b is greater than or equal to a + 14.</p>	
841417	<p>Preferably excluded from the present invention are</p>	

	one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3470 of SEQ ID NO:557, b is an integer of 15 to 3484, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:557, and where b is greater than or equal to a + 14.	
841548	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 776 of SEQ ID NO:558, b is an integer of 15 to 790, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:558, and where b is greater than or equal to a + 14.	AA223588
841632	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 544 of SEQ ID NO:559, b is an integer of 15 to 558, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:559, and where b is greater than or equal to a + 14.	
841662	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 520 of SEQ ID NO:560, b is an integer of 15 to 534, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:560, and where b is greater than or equal to a + 14.	H15850, H99706, N78646, W74702, W94916, AA809695
841771	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3029 of SEQ ID NO:561, b is an integer of 15 to 3043, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:561, and where b is greater than or equal to a + 14.	T50029, T67900, T74699, T74819, T88802, T81298, T84439, T95656, R06092, R06196, R14563, R14966, R14970, R16465, R38948, R40957, R40957, R63975, R64085, R66362, R66363, R67505, H17644, H17758, R92097, H48240, H48331, H49625, H49715, H61167, H62068, H69147, N25753, N36472, N69035, N71493, N92970, N98567, N99536, W00665, W24251, W40582, W45462, W45538, W45525, W45687, W44315, W57971, W57944, W70012, W70013, W86733, AA044684, AA071192, AA071199, AA190325, AA191520, AA533197, AA558210, AA581106, AA581161, AA577119, AA857551, AA878885, AA936839, AA975697, D78980, W28535, C02075, C17857
841827	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1372 of SEQ ID NO:562, b is an integer of 15 to 1386, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:562, and where b is	

	greater than or equal to $a + 14$ .	
841835	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2624 of SEQ ID NO:563, b is an integer of 15 to 2638, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:563, and where b is greater than or equal to $a + 14$ .	
842259	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 677 of SEQ ID NO:564, b is an integer of 15 to 691, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:564, and where b is greater than or equal to $a + 14$ .	
842463	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1953 of SEQ ID NO:565, b is an integer of 15 to 1967, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:565, and where b is greater than or equal to $a + 14$ .	
842595	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1320 of SEQ ID NO:566, b is an integer of 15 to 1334, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:566, and where b is greater than or equal to $a + 14$ .	
842722	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1596 of SEQ ID NO:567, b is an integer of 15 to 1610, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:567, and where b is greater than or equal to $a + 14$ .	
842815	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1398 of SEQ ID NO:568, b is an integer of 15 to 1412, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:568, and where b is greater than or equal to $a + 14$ .	
842818	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1111 of SEQ ID NO:569, b is an integer of 15 to 1125, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:569, and where b is greater than or equal to $a + 14$ .	

843251	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1902 of SEQ ID NO:570, b is an integer of 15 to 1916, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:570, and where b is greater than or equal to a + 14.	
843422	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1239 of SEQ ID NO:571, b is an integer of 15 to 1253, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:571, and where b is greater than or equal to a + 14.	
843784	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1999 of SEQ ID NO:572, b is an integer of 15 to 2013, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:572, and where b is greater than or equal to a + 14.	
844017	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 655 of SEQ ID NO:573, b is an integer of 15 to 669, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:573, and where b is greater than or equal to a + 14.	AA075932
844138	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2418 of SEQ ID NO:574, b is an integer of 15 to 2432, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:574, and where b is greater than or equal to a + 14.	T54096, T54187, T54360, T39143, T40432, T90493, T90589, T89428, T89794, T80000, R00221, R00327, R25952, R26450, R26761, R28459, R55293, R55390, R73233, H42630, H44454, H44498, R83525, R86282, H85785, N33586, N34419, N36244, N48653, N49430, W51915, AA055530, AA055939, AA069732, AA100817, AA122084, AA121407, AA126332, AA133329, AA134151, AA134152, AA134714, AA136470, AA136960, AA157850, AA157906, AA157976, AA159365, AA171854, AA187219, AA186342, AA250818, AA464565, AA464666, AA428826, AA429361, AA491863, AA505512, AA524490, AA558038, AA581979, AA588712, AA593885, AA601110, AA573930, AA577156, AA578735, AA689519, AA730155, AA768486, AA805061, AA826981, AA865985, AA931167, AA947324, AA953202, AA961105, AA962413, AA976440, AA977760, AI032134, AI053416, AI053575,

		AI054013, AI054146, AI054281, U46376, W22126, C00371, C05283, AA641416, AA643346, AA292261, AA421818, AA496452, AA496521, AA653437, AA664399, AA680123, AA431832, AA434143, AA678582, AA705952, AA679763, AA733019, AA781645, AA813232, AA833597, AA844624, AI024151, AI038232, AI042551, AI080152, AI086490, T24101, F03522, F07244
844166	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1358 of SEQ ID NO:575, b is an integer of 15 to 1372, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:575, and where b is greater than or equal to a + 14.	
844194	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2006 of SEQ ID NO:576, b is an integer of 15 to 2020, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:576, and where b is greater than or equal to a + 14.	
844394	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3147 of SEQ ID NO:577, b is an integer of 15 to 3161, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:577, and where b is greater than or equal to a + 14.	
844450	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2032 of SEQ ID NO:578, b is an integer of 15 to 2046, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:578, and where b is greater than or equal to a + 14.	
844534	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 288 of SEQ ID NO:579, b is an integer of 15 to 302, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:579, and where b is greater than or equal to a + 14.	
844535	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 3053 of SEQ ID NO:580, b is an integer of 15 to 3067, where both a and b correspond to the positions of nucleotide	

	residues shown in SEQ ID NO:580, and where b is greater than or equal to a + 14.	
844644	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1560 of SEQ ID NO:581, b is an integer of 15 to 1574, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:581, and where b is greater than or equal to a + 14.	
844653	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 946 of SEQ ID NO:582, b is an integer of 15 to 960, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:582, and where b is greater than or equal to a + 14.	
844659	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 527 of SEQ ID NO:583, b is an integer of 15 to 541, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:583, and where b is greater than or equal to a + 14.	
844796	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2954 of SEQ ID NO:584, b is an integer of 15 to 2968, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:584, and where b is greater than or equal to a + 14.	
844812	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2594 of SEQ ID NO:585, b is an integer of 15 to 2608, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:585, and where b is greater than or equal to a + 14.	
844894	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1879 of SEQ ID NO:586, b is an integer of 15 to 1893, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:586, and where b is greater than or equal to a + 14.	
845361	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2449 of SEQ ID NO:587, b is an integer of 15 to 2463, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:587, and where b is	T93072, T93161, T69748, T70732, R01200, R01312, R05457, R05477, R05584, R43190, R43190, R65942, R75719, R78234, H03875, H03876, H15845, H16155, H17787, H40269, H45881, R84787, R92493, R92931, H58301, H58912, H58913, H62257,

	greater than or equal to a + 14.	H67051, H68135, H81385, H83681, H91363, H96711, N20348, N22509, N27952, N28616, N31997, N32005, N36007, N39356, N40718, N70011, N70094, N92576, N99870, W00896, W00925, W04623, W25220, W31522, W37278, W37791, W38868, W52654, W51751, AA017158, AA019458, AA022914, AA022915, AA037370, AA037502, AA045696, AA045697, AA046013, AA054565, AA054625, AA069778, AA079736, AA081087, AA081144, AA100055, AA100504, AA100334, AA115581, AA115554, AA126149, AA126373, AA133101, AA130558, AA136439, AA151673, AA151821, AA151822, AA159031, AA165200, AA165201, AA176477, AA176498, AA176771, AA176830, AA182601, AA176736, AA187943, AA188578, AA188675, AA190342, AA190343, AA195091, AA213662, AA213715, AA232222, AA426516, AA424760, AA483564, AA490859, AA491042, AA505249, AA507988, AA508858, AA513433, AA514771, AA514785, AA514980, AA527545, AA534100, AA554008, AA557148, AA584946, AA586481, AA587849, AA588781, AA593916, AA605049, AA604893, AA617650, AA568567, AA621979, AA627588, AA578585, AA578744, AA661910, AA729355, AA729902, AA736994, AA738388, AA740375, AA741213, AA760943, AA830401, AA834201, AA834208, AA834250, AA864864, AA888527, AA906940, AA922073, AA927272, AA931625, AA933055, AA932772, AA936861, AA938504, AA975187, AA977857, AA975594, AI000724, AI014600, AI017381, AI066441, D82733, U47688, N83708, N83790, N85010, W22533, W23255, N86314, N87393, N88971, AA642249, AA642903, AA090403, AA091011, AA095990, AA205824, AA204931, AA643262, AA648446, AA216706, AA219615, AA249170, C75338, AA599187, AA668746, AA670340, AA405611, AA405150, AA708635, AA716044, AA722076, AA722829, AA725716, AA781064, AA844379, AI037987, AI039577, AI078722, AI077655, AI080306, AI084320, AI085219, AI093296, AI093479, AI095168, AI095267, D29018, F02782.
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		F06502, F00762, F00966
845620	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1931 of SEQ ID NO:588, b is an integer of 15 to 1945, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:588, and where b is greater than or equal to a + 14.	
845639	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 802 of SEQ ID NO:589, b is an integer of 15 to 816, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:589, and where b is greater than or equal to a + 14.	
845660	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2293 of SEQ ID NO:590, b is an integer of 15 to 2307, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:590, and where b is greater than or equal to a + 14.	
845720	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1424 of SEQ ID NO:591, b is an integer of 15 to 1438, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:591, and where b is greater than or equal to a + 14.	
845785	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1064 of SEQ ID NO:592, b is an integer of 15 to 1078, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:592, and where b is greater than or equal to a + 14.	
845897	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2478 of SEQ ID NO:593, b is an integer of 15 to 2492, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:593, and where b is greater than or equal to a + 14.	
845922	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1890 of SEQ ID NO:594, b is an integer of 15 to 1904, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:594, and where b is greater than or equal to a + 14.	



846016	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 323 of SEQ ID NO:595, b is an integer of 15 to 337, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:595, and where b is greater than or equal to a + 14.	
846040	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1274 of SEQ ID NO:596, b is an integer of 15 to 1288, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:596, and where b is greater than or equal to a + 14.	
846073	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 1038 of SEQ ID NO:597, b is an integer of 15 to 1052, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:597, and where b is greater than or equal to a + 14.	T83567, T83771, R51147, N26938, N32715, N36666, W57781, W74108, AA082091, AA425613
846257	Preferably excluded from the present invention are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 to 2079 of SEQ ID NO:598, b is an integer of 15 to 2093, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:598, and where b is greater than or equal to a + 14.	

*Polynucleotide and Polypeptide Variants*

The present invention is directed to variants of the polynucleotide sequence disclosed in SEQ ID NO:X or the complementary strand thereto, and/or the cDNA sequence contained in a cDNA clone contained in the deposit.

5       The present invention also encompasses variants of the cancer polypeptide sequence disclosed in SEQ ID NO:Y, a polypeptide sequence encoded by the polynucleotide sequence in SEQ ID NO:X, and/or a polypeptide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

10       "Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

      The present invention is also directed to nucleic acid molecules which comprise, or alternatively consist of, a nucleotide sequence which is at least 80%, 85%, 90%, 95%, 96%, 15 97%, 98%, 99% or 100%, identical to, for example, the nucleotide coding sequence in SEQ ID NO:X or the complementary strand thereto, the nucleotide coding sequence of the related cDNA contained in a deposited library or the complementary strand thereto, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a nucleotide 20 sequence encoding the polypeptide encoded by the cDNA in the related cDNA contained in a deposited library, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polypeptides encoded by these nucleic acid molecules are also encompassed by the invention. In another embodiment, the invention encompasses nucleic acid molecules which comprise or alternatively consist of, a 25 polynucleotide which hybridizes under stringent hybridization conditions, or alternatively, under low stringency conditions, to the nucleotide coding sequence in SEQ ID NO:X, the nucleotide coding sequence of the related cDNA clone contained in a deposited library, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a 30 nucleotide sequence encoding the polypeptide encoded by the cDNA in the related cDNA clone contained in a deposited library, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polynucleotides which

hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

The present invention is also directed to polypeptides which comprise, or alternatively  
5 consist of, an amino acid sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to, for example, the polypeptide sequence shown in SEQ ID NO:Y, a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the cDNA in the related cDNA clone contained in a deposited library, and/or polypeptide fragments of any of these polypeptides (e.g., those fragments described  
10 herein). Polynucleotides which hybridize to the complement of the nucleic acid molecules encoding these polypeptides under stringent hybridization conditions, or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

By a nucleic acid having a nucleotide sequence at least, for example, 95% "identical"  
15 to a reference nucleotide sequence of the present invention, it is intended that the nucleotide sequence of the nucleic acid is identical to the reference sequence except that the nucleotide sequence may include up to five point mutations per each 100 nucleotides of the reference nucleotide sequence encoding the polypeptide. In other words, to obtain a nucleic acid having a nucleotide sequence at least 95% identical to a reference nucleotide sequence, up to  
20 5% of the nucleotides in the reference sequence may be deleted or substituted with another nucleotide, or a number of nucleotides up to 5% of the total nucleotides in the reference sequence may be inserted into the reference sequence. The query sequence may be, for example, an entire sequence referred to in Table 1, an ORF (open reading frame), or any fragment specified as described herein.

25 As a practical matter, whether any particular nucleic acid molecule or polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a nucleotide sequence of the present invention can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global  
30 sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. 6:237-245 (1990)). In a sequence alignment the query and subject sequences are both DNA sequences. An RNA sequence can be

compared by converting U's to T's. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB alignment of DNA sequences to calculate percent identity are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30, Randomization Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size  
5 Penalty 0.05, Window Size=500 or the length of the subject nucleotide sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence because of 5' or 3' deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for 5' and 3' truncations of the  
10 subject sequence when calculating percent identity. For subject sequences truncated at the 5' or 3' ends, relative to the query sequence, the percent identity is corrected by calculating the number of bases of the query sequence that are 5' and 3' of the subject sequence, which are not matched/aligned, as a percent of the total bases of the query sequence. Whether a nucleotide is matched/aligned is determined by results of the FASTDB sequence alignment.  
15 This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This corrected score is what is used for the purposes of the present invention. Only bases outside the 5' and 3' bases of the subject sequence, as displayed by the FASTDB alignment, which are not matched/aligned with the query sequence, are calculated for the purposes of  
20 manually adjusting the percent identity score.

For example, a 90 base subject sequence is aligned to a 100 base query sequence to determine percent identity. The deletions occur at the 5' end of the subject sequence and therefore, the FASTDB alignment does not show a matched/alignment of the first 10 bases at 5' end. The 10 unpaired bases represent 10% of the sequence (number of bases at the 5' and  
25 3' ends not matched/total number of bases in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 bases were perfectly matched the final percent identity would be 90%. In another example, a 90 base subject sequence is compared with a 100 base query sequence. This time the deletions are internal deletions so that there are no bases on the 5' or 3' of the subject sequence which  
30 are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only bases 5' and 3' of the subject sequence which are not matched/aligned with the query sequence are manually corrected for. No other

manual corrections are to made for the purposes of the present invention.

By a polypeptide having an amino acid sequence at least, for example, 95% "identical" to a query amino acid sequence of the present invention, it is intended that the amino acid sequence of the subject polypeptide is identical to the query sequence except that  
5 the subject polypeptide sequence may include up to five amino acid alterations per each 100 amino acids of the query amino acid sequence. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a query amino acid sequence, up to 5% of the amino acid residues in the subject sequence may be inserted, deleted, (indels) or substituted with another amino acid. These alterations of the reference sequence may occur  
10 at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions, interspersed either individually among residues in the reference sequence or in one or more contiguous groups within the reference sequence.

As a practical matter, whether any particular polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to, for instance, the amino acid sequence in SEQ ID  
15 NO:Y or a fragment thereof, the amino acid sequence encoded by the nucleotide sequence in SEQ ID NO:X or a fragment thereof, or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library, or a fragment thereof, can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present  
20 invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci.6:237- 245(1990)). In a sequence alignment the query and subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is in percent identity. Preferred parameters used in a  
25 FASTDB amino acid alignment are: Matrix=PAM 0, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Window Size=sequence length, Gap Penalty=5, Gap Size Penalty=0.05, Window Size=500 or the length of the subject amino acid sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence due to N- or C-terminal  
30 deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for N- and C-terminal truncations of the subject sequence when calculating global percent identity. For subject sequences

truncated at the N- and C-termini, relative to the query sequence, the percent identity is corrected by calculating the number of residues of the query sequence that are N- and C-terminal of the subject sequence, which are not matched/aligned with a corresponding subject residue, as a percent of the total bases of the query sequence. Whether a residue is  
5 matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This final percent identity score is what is used for the purposes of the present invention. Only residues to the N- and C-termini of the subject sequence, which are not matched/aligned with the  
10 query sequence, are considered for the purposes of manually adjusting the percent identity score. That is, only query residue positions outside the farthest N- and C- terminal residues of the subject sequence.

For example, a 90 amino acid residue subject sequence is aligned with a 100 residue query sequence to determine percent identity. The deletion occurs at the N-terminus of the  
15 subject sequence and therefore, the FASTDB alignment does not show a matching/alignment of the first 10 residues at the N-terminus. The 10 unpaired residues represent 10% of the sequence (number of residues at the N- and C- termini not matched/total number of residues in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 residues were perfectly matched the final percent  
20 identity would be 90%. In another example, a 90 residue subject sequence is compared with a 100 residue query sequence. This time the deletions are internal deletions so there are no residues at the N- or C-termini of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only residue positions outside the N- and C-terminal ends of the subject  
25 sequence, as displayed in the FASTDB alignment, which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to be made for the purposes of the present invention.

The variants may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce  
30 silent substitutions, additions, or deletions, but do not alter the properties or activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, variants in which less than 50, less

than 40, less than 30, less than 20, less than 10, or 5-50, 5-25, 5-10, 1-5, or 1-2 amino acids are substituted, deleted, or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in the human mRNA to those preferred by a bacterial host such as *E. coli*).

Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985).) These allelic variants can vary at either the polynucleotide and/or polypeptide level and are included in the present invention. Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, as discussed herein, one or more amino acids can be deleted from the N-terminus or C-terminus of the polypeptide of the present invention without substantial loss of biological function. The authors of Ron et al., *J. Biol. Chem.* 268: 2984-2988 (1993), reported variant KGF proteins having heparin binding activity even after deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., *J. Biotechnology* 7:199-216 (1988).)

Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (*J. Biol. Chem.* 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." (See, Abstract.) In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

Furthermore, as discussed herein, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more

biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form are removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

Thus, the invention further includes polypeptide variants which show a functional activity (e.g., biological activity) of the polypeptide of the invention of which they are a variant. Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as have little effect on activity.

The present application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein or fragments thereof, (e.g., including but not limited to fragments encoding a polypeptide having the amino acid sequence of an N and/or C terminal deletion), irrespective of whether they encode a polypeptide having functional activity. This is because even where a particular nucleic acid molecule does not encode a polypeptide having functional activity, one of skill in the art would still know how to use the nucleic acid molecule, for instance, as a hybridization probe or a polymerase chain reaction (PCR) primer. Uses of the nucleic acid molecules of the present invention that do not encode a polypeptide having functional activity include, inter alia, (1) isolating a gene or allelic or splice variants thereof in a cDNA library; (2) in situ hybridization (e.g., "FISH") to metaphase chromosomal spreads to provide precise chromosomal location of the gene, as described in Verma et al., Human Chromosomes: A Manual of Basic Techniques, Pergamon Press, New York (1988); and (3) Northern Blot analysis for detecting mRNA expression in specific tissues.

Preferred, however, are nucleic acid molecules having sequences at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, which do, in fact, encode a polypeptide having a functional activity of a polypeptide of the invention.

Of course, due to the degeneracy of the genetic code, one of ordinary skill in the art will immediately recognize that a large number of the nucleic acid molecules having a sequence at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to, for example, the nucleic acid sequence of the cDNA in the related cDNA clone contained in a



deposited library, the nucleic acid sequence referred to in Table I (SEQ ID NO:X), or fragments thereof, will encode polypeptides "having functional activity." In fact, since degenerate variants of any of these nucleotide sequences all encode the same polypeptide, in many instances, this will be clear to the skilled artisan even without performing the above  
5 described comparison assay. It will be further recognized in the art that, for such nucleic acid molecules that are not degenerate variants, a reasonable number will also encode a polypeptide having functional activity. This is because the skilled artisan is fully aware of amino acid substitutions that are either less likely or not likely to significantly effect protein function (e.g., replacing one aliphatic amino acid with a second aliphatic amino acid), as  
10 further described below.

For example, guidance concerning how to make phenotypically silent amino acid substitutions is provided in Bowie et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions," *Science* 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid  
15 sequence to change.

The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for protein function. In contrast, the amino acid positions where substitutions have  
20 been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For  
25 example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. (Cunningham and Wells, *Science* 244:1081-1085 (1989).) The resulting mutant molecules can then be tested for biological activity.

As the authors state, these two strategies have revealed that proteins are surprisingly  
30 tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side

chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly. Besides conservative amino acid substitution, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitution with one or more of amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility of the polypeptide (for example, polyethylene glycol), or (iv) fusion of the polypeptide with additional amino acids, such as, for example, an IgG Fc fusion region peptide, or leader or secretory sequence, or a sequence facilitating purification. Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved characteristics, such as less aggregation. Aggregation of pharmaceutical formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. (Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).)

A further embodiment of the invention relates to a polypeptide which comprises the amino acid sequence of a polypeptide having an amino acid sequence which contains at least one amino acid substitution, but not more than 50 amino acid substitutions, even more preferably, not more than 40 amino acid substitutions, still more preferably, not more than 30 amino acid substitutions, and still even more preferably, not more than 20 amino acid substitutions. Of course it is highly preferable for a polypeptide to have an amino acid sequence which comprises the amino acid sequence of a polypeptide of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, and/or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library which contains, in order of ever-increasing preference, at least one, but not more than 10, 9, 8, 7, 6, 5, 4, 3, 2 or 1

amino acid substitutions. In specific embodiments, the number of additions, substitutions, and/or deletions in the amino acid sequence of SEQ ID NO:Y or fragments thereof (e.g., the mature form and/or other fragments described herein), an amino acid sequence encoded by SEQ ID NO:X or fragments thereof, and/or the amino acid sequence encoded by the cDNA in the related cDNA clone contained in a deposited library or fragments thereof, is 1-5, 5-10, 5-25, 5-50, 10-50 or 50-150, conservative amino acid substitutions are preferable.

#### *Polynucleotide and Polypeptide Fragments*

The present invention is also directed to polynucleotide fragments of the cancer polynucleotides (nucleic acids) of the invention. In the present invention, a "polynucleotide fragment" refers, for example, to a polynucleotide having a nucleic acid sequence which: is a portion of the cDNA contained in a deposited cDNA clone; or is a portion of a polynucleotide sequence encoding the polypeptide encoded by the cDNA contained in a deposited cDNA clone; or is a portion of the polynucleotide sequence in SEQ ID NO:X or the complementary strand thereto; or is a polynucleotide sequence encoding a portion of the polypeptide of SEQ ID NO:Y; or is a polynucleotide sequence encoding a portion of a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto. The nucleotide fragments of the invention are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt, at least about 50 nt; at least about 75 nt, at least about 100 nt, at least about 125 nt or at least about 150 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from, for example, the sequence contained in the cDNA in a related cDNA clone contained in a deposited library, the nucleotide sequence shown in SEQ ID NO:X or the complementary stand thereto. In this context "about" includes the particularly recited value or a value larger or smaller by several (5, 4, 3, 2, or 1) nucleotides. These nucleotide fragments have uses that include, but are not limited to, as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., at least 150, 175, 200, 250, 500, 600, 1000, or 2000 nucleotides in length) are also encompassed by the invention.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900,

901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-  
5 2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, and 3551 to the end of SEQ ID NO:X, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3,  
10 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity) of the polypeptide encoded by the polynucleotide of which the sequence is a portion. More preferably, these fragments can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these nucleic acid molecules under stringent hybridization  
15 conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides or fragments.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-  
20 400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-  
25 2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, and 3551 to the end of the cDNA nucleotide sequence contained in the deposited cDNA clone, or the complementary strand thereto. In this context "about" includes the particularly  
30 recited range, or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity) of the polypeptide encoded by the cDNA

nucleotide sequence contained in the deposited cDNA clone. More preferably, these fragments can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these fragments under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as  
5 are polypeptides encoded by these polynucleotides or fragments.

In the present invention, a "polypeptide fragment" refers to an amino acid sequence which is a portion of that contained in SEQ ID NO:Y, a portion of an amino acid sequence encoded by the polynucleotide sequence of SEQ ID NO:X, and/or encoded by the cDNA contained in the related cDNA clone contained in a deposited library. Protein (polypeptide)  
10 fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, an amino acid sequence from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180,  
15 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100,  
20 1101-1120, 1121-1140, 1141-1160, 1161-1180, and 1181 to the end of SEQ ID NO:Y. Moreover, polypeptide fragments of the invention may be at least about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges or values, or ranges or values larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either terminus or at both  
25 termini. Polynucleotides encoding these polypeptide fragments are also encompassed by the invention.

Even if deletion of one or more amino acids from the N-terminus of a protein results in modification or loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still  
30 be retained. For example, the ability of shortened muteins to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptides generally will be retained when less than the majority of the residues of the complete or mature polypeptide are

removed from the N-terminus. Whether a particular polypeptide lacking N-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted N-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

Accordingly, polypeptide fragments of the invention include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both. For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions are preferred. Similarly, polynucleotides encoding these polypeptide fragments are also preferred.

The present invention further provides polypeptides having one or more residues deleted from the amino terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, and/or a polypeptide encoded by the cDNA contained in the related cDNA clone contained in a deposited library). In particular, N-terminal deletions may be described by the general formula m-q, where q is a whole integer representing the total number of amino acid residues in a polypeptide of the invention (e.g., the polypeptide disclosed in SEQ ID NO:Y), and m is defined as any integer ranging from 2 to q-6. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Also as mentioned above, even if deletion of one or more amino acids from the C-terminus of a protein results in modification or loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example the ability of the shortened mutein to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptide generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the C-terminus. Whether a particular polypeptide lacking C-terminal residues of a complete polypeptide retains such immunologic

activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted C-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

5       Accordingly, the present invention further provides polypeptides having one or more residues from the carboxy terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, and/or a polypeptide encoded by the cDNA contained in deposited cDNA clone referenced in Table 1). In particular, C-terminal deletions may be  
10       described by the general formula 1-n, where n is any whole integer ranging from 6 to q-1, and where n corresponds to the position of an amino acid residue in a polypeptide of the invention. Polynucleotides encoding these polypeptides are also encompassed by the invention.

      In addition, any of the above described N- or C-terminal deletions can be combined to  
15       produce a N- and C-terminal deleted polypeptide. The invention also provides polypeptides having one or more amino acids deleted from both the amino and the carboxyl termini, which may be described generally as having residues m-n of a polypeptide encoded by SEQ ID NO:X (e.g., including, but not limited to, the preferred polypeptide disclosed as SEQ ID NO:Y), and/or the cDNA in the related cDNA clone contained in a deposited library, where n  
20       and m are integers as described above. Polynucleotides encoding these polypeptides are also encompassed by the invention.

      Any polypeptide sequence contained in the polypeptide of SEQ ID NO:Y, encoded by the polynucleotide sequences set forth as SEQ ID NO:X, or encoded by the cDNA in the related cDNA clone contained in a deposited library may be analyzed to determine certain  
25       preferred regions of the polypeptide. For example, the amino acid sequence of a polypeptide encoded by a polynucleotide sequence of SEQ ID NO:X, or the cDNA in a deposited cDNA clone may be analyzed using the default parameters of the DNASTAR computer algorithm (DNASTAR, Inc., 1228 S. Park St., Madison, WI 53715 USA; <http://www.dnastar.com/>).

      Polypeptide regions that may be routinely obtained using the DNASTAR computer  
30       algorithm include, but are not limited to, Garnier-Robson alpha-regions, beta-regions, turn-regions, and coil-regions, Chou-Fasman alpha-regions, beta-regions, and turn-regions, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Eisenberg alpha- and

beta-amphipathic regions, Karplus-Schulz flexible regions, Emini surface-forming regions and Jameson-Wolf regions of high antigenic index. Among highly preferred polynucleotides of the invention in this regard are those that encode polypeptides comprising regions that combine several structural features, such as several (e.g., 1, 2, 3 or 4) of the features set out  
5 above.

Additionally, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Emini surface-forming regions, and Jameson-Wolf regions of high antigenic index (i.e., containing four or more contiguous amino acids having an antigenic index of greater than or equal to 1.5, as identified using the default parameters of the Jameson-Wolf program) can routinely be  
10 used to determine polypeptide regions that exhibit a high degree of potential for antigenicity. Regions of high antigenicity are determined from data by DNASTAR analysis by choosing values which represent regions of the polypeptide which are likely to be exposed on the surface of the polypeptide in an environment in which antigen recognition may occur in the process of initiation of an immune response.

15 Preferred polypeptide fragments of the invention are fragments comprising, or alternatively consisting of, an amino acid sequence that displays a functional activity of the polypeptide sequence of which the amino acid sequence is a fragment.

By a polypeptide demonstrating a "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length  
20 (complete) protein of the invention. Such functional activities include, but are not limited to, biological activity, antigenicity [ability to bind (or compete with a polypeptide for binding) to an anti-polypeptide antibody], immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide.

25 Other preferred polypeptide fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

In preferred embodiments, polypeptides of the invention comprise, or alternatively  
30 consist of, one, two, three, four, five or more of the antigenic fragments of the polypeptide of SEQ ID NO:Y, or portions thereof. Polynucleotides encoding these polypeptides are also encompassed by the invention.



Table 4.

Sequence/ Contig ID	Epitope
507291	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 843 as residues: Pro-12 to Pro-20, Lys-27 to Gly-34, Pro-67 to Arg-72, Asp-102 to Thr-111, Asp-136 to Gly-142, Ser-153 to Pro-158.
508000	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 844 as residues: Ala-16 to Trp-35.
518325	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 845 as residues: Glu-60 to Asp-67.
523111	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 846 as residues: Ser-1 to Gln-10.
532211	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 848 as residues: Cys-17 to Arg-22.
532247	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 849 as residues: Val-4 to His-10.
537932	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 850 as residues: Ser-62 to Gly-68.
540117	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 851 as residues: Pro-24 to Arg-30, Met-101 to Phe-106, Thr-138 to Asn-153.
547710	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 852 as residues: Asp-1 to Arg-7, Glu-25 to His-31, Ile-51 to Lys-56, Pro-61 to Pro-67, Gly-113 to Thr-119, Lys-125 to Asp-130, His-335 to Gly-340, Arg-364 to Pro-371.
551747	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 853 as residues: Lys-79 to Ala-88, Ser-109 to Leu-125, Asp-155 to Lys-163, Tyr-211 to Thr-219, Pro-221 to Ala-226.
552799	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 854 as residues: Gln-81 to Thr-114, Gln-200 to Arg-206.
553243	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 855 as residues: Ala-43 to Asp-48, Asp-64 to Lys-69, His-88 to Thr-94, Ala-107 to Phe-113, Leu-117 to Ser-125, Thr-132 to Glu-138, Ser-169 to Trp-181, Ser-194 to Thr-200.
553368	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 856 as residues: Ser-52 to Arg-57, Leu-76 to Gly-82, Ser-91 to Glu-96, Tyr-132 to Ala-147.
554349	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 857 as residues: Ala-31 to Gly-36, Ala-68 to Tyr-75, Gln-121 to Asp-127.
558491	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 858 as residues: Pro-1 to Arg-10.
558983	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 859 as residues: Pro-37 to Gly-42, Val-67 to Lys-84, Gln-122 to Gly-127.
589390	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 862 as residues: Glu-14 to Asn-19, Arg-68 to Ser-74, Ser-79 to Ala-84, Lys-95 to Ile-101, Lys-125 to Glu-138.
596882	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 863 as residues: Lys-15 to Lys-23, Pro-29 to Gly-34.
616289	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 864 as residues: Leu-1 to Pro-13, Thr-64 to Gly-70, Lys-119 to Arg-130.
622140	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 865 as residues: Ser-1 to Lys-6, Pro-16 to Ser-23, Arg-49 to Glu-58.
647714	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 867 as residues: Arg-1 to Gly-9, Glu-27 to Gly-36, Pro-72 to Phe-86, Pro-104 to Cys-111, Gln-145 to Lys-162, Arg-226 to Trp-233.
652156	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 871 as residues: Asn-30 to Ile-43, Ile-76 to Lys-81.
653010	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 872 as

	residues: Ser-1 to Ala-10.
655904	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 873 as residues: Ala-21 to Cys-27, Ser-76 to Gly-87, Ser-112 to Trp-121, Trp-128 to Asn-133, Glu-225 to Cys-231, Tyr-238 to Cys-248, Lys-269 to Asp-279, Phe-292 to Thr-298, Cys-357 to Ala-362, Pro-383 to Pro-388, Lys-412 to Lys-420.
657852	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 874 as residues: Arg-10 to Lys-22, Gln-48 to Glu-53, Arg-73 to Asn-86.
666414	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 875 as residues: Asn-9 to Lys-19, Arg-27 to Gly-32, Ser-58 to Thr-70, Ala-81 to Pro-86.
670188	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 877 as residues: Asn-68 to Ser-75.
670279	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 878 as residues: Lys-86 to Lys-91, Glu-101 to Val-120, Ala-130 to Glu-136.
670729	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 879 as residues: Ala-116 to Asp-134.
676496	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 881 as residues: Ile-1 to Arg-8.
678248	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 883 as residues: Ala-16 to Lys-22, Tyr-30 to Asn-35, Asp-61 to Val-70, Arg-129 to Asn-135, Thr-142 to Gly-148.
683668	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 884 as residues: Ser-3 to Gly-28, Gly-46 to Pro-56, Gly-70 to Ile-92, Gln-102 to Ser-117, Ala-123 to Pro-129, Pro-135 to Leu-140, Pro-150 to Asp-158, Pro-165 to Pro-177, Gln-188 to Asp-205, Ile-230 to Arg-245, His-251 to Trp-260, Asp-262 to Cys-267, Asn-296 to Arg-307, Glu-322 to Pro-330, Ile-351 to Asn-357, Asp-363 to Leu-369, Glu-386 to Phe-391, Lys-415 to Ser-420.
693172	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 885 as residues: Arg-11 to Arg-18, Pro-51 to Lys-58.
694303	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 886 as residues: Pro-12 to Ser-17, Leu-30 to Cys-39, Val-49 to Pro-54, Pro-67 to Leu-73, Pro-84 to Gln-90, His-99 to Leu-109.
695042	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 887 as residues: Ser-4 to Trp-28, Pro-51 to Leu-56, Asn-64 to His-70.
699799	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 888 as residues: Gln-17 to Phe-25, Glu-42 to Tyr-48, Val-52 to Gly-57, Pro-67 to Ser-73, Thr-97 to Gln-106, Gln-113 to Leu-123, Arg-171 to Asp-178, Arg-184 to Leu-191, Ile-195 to Phe-203, Lys-212 to Glu-217, Ala-236 to Asp-244, Arg-255 to Leu-260, Lys-266 to His-273, Glu-357 to Glu-363.
703015	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 890 as residues: Pro-27 to Asp-37, Gly-55 to Pro-61, His-96 to Ala-101, Glu-151 to Asn-156, Tyr-166 to Cys-178.
706391	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 891 as residues: Pro-22 to Ala-34, Pro-40 to Glu-52.
706924	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 893 as residues: Gly-1 to Gly-9, Gln-21 to Met-27.
707642	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 894 as residues: Glu-33 to Lys-40, Asn-55 to Lys-64, Tyr-104 to Cys-110, Ser-138 to Arg-148, Arg-157 to Gly-163, Lys-165 to Asn-172.
710369	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 895 as residues: Asn-1 to Thr-10.
718826	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 896 as residues: Ser-57 to Pro-63, Lys-93 to Ser-99.
719790	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 897 as residues: Phe-4 to Gln-23, Glu-47 to Ala-56, Asn-95 to Gln-102, Gln-109 to Glu-115, Arg-168 to Glu-175, Thr-196 to Arg-201, Lys-209 to Asp-215, Val-236 to Val-243.
720222	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 898 as

	residues: Glu-37 to Arg-43, Gly-62 to Pro-67, Gly-95 to Val-101, Gln-109 to Asp-114, Ala-137 to Phe-145, Asp-181 to Ser-188.
724033	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 899 as residues: Glu-55 to Glu-60, Asp-76 to Ser-85, Lys-106 to Asp-111, Gln-131 to Arg-137, Ala-172 to Gly-218.
724767	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 900 as residues: Leu-49 to Tyr-56, Tyr-114 to Glu-136, Arg-142 to Gly-148.
727065	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 901 as residues: Asn-41 to Gly-46, Lys-82 to His-88, Glu-107 to His-112, Leu-127 to Asp-132, Phe-163 to Phe-175, Thr-202 to Ile-209, Lys-229 to Gly-237, Ala-239 to Tyr-245.
727246	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 902 as residues: Pro-2 to Gly-10.
739448	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 908 as residues: His-2 to Leu-8, Gln-33 to Glu-40, Ala-44 to Glu-55, Gly-57 to Ser-67, Glu-70 to Ala-84, Glu-95 to Lys-111, Ile-186 to Asp-205, Leu-232 to Asp-238.
740060	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 910 as residues: Pro-44 to Thr-50, Arg-72 to Lys-80, Tyr-241 to Asn-251, Lys-273 to Gly-282, Ser-302 to Asn-312, Pro-337 to Ser-343, Ile-367 to Asp-376, Gly-395 to Tyr-417, Ser-442 to Gln-448.
741560	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 911 as residues: Gln-33 to Tyr-39, Pro-42 to Phe-47.
742543	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 912 as residues: Phe-10 to Tyr-15, Glu-139 to Asp-144, Glu-166 to Asn-171, Lys-175 to Glu-181.
742831	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 913 as residues: Val-64 to Glu-69.
745327	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 914 as residues: Arg-1 to Pro-13, Pro-54 to Ala-61.
745695	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 915 as residues: Trp-130 to Ser-135, Leu-199 to Thr-210, Ser-221 to Gln-229, Ala-249 to Tyr-255, Pro-257 to Pro-267, Ser-309 to Arg-314.
750316	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 916 as residues: Pro-18 to Asn-24, Thr-65 to Asp-70.
750522	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 917 as residues: Gln-10 to Lys-15.
750583	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 918 as residues: Lys-9 to Thr-15, Gln-32 to Gln-40.
751020	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 919 as residues: Arg-39 to Leu-47, Ser-107 to Ile-117, Pro-135 to Gln-144.
752196	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 920 as residues: Lys-20 to Lys-28.
753084	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 921 as residues: Lys-84 to Thr-98, Arg-128 to Ser-134, Arg-244 to Asn-252, Lys-365 to His-372.
754957	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 922 as residues: Pro-101 to Glu-106, Glu-116 to Asp-127, Ser-199 to Ile-210, Asp-217 to Asp-229, Ser-239 to Gly-244, Gln-262 to Asn-273, Pro-279 to Ser-284, Lys-318 to Arg-326, Lys-334 to Ile-341.
756557	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 923 as residues: Val-13 to Phe-21, Ile-55 to Pro-63, Ser-69 to Leu-74, Arg-82 to Leu-96, Asn-131 to Leu-139, Ile-156 to Thr-164, Thr-241 to Leu-249, Gly-273 to Ser-279, Thr-282 to Arg-289.
756712	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 924 as residues: Ile-4 to Thr-37, Gln-42 to Ser-48, Asn-56 to Lys-69, Ser-79 to Ser-85.
757414	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 925 as residues: Glu-14 to Thr-23, His-50 to Arg-62, Tyr-72 to Cys-78, Gly-121 to Pro-128.

757614	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 926 as residues: Gly-13 to Cys-19, Thr-32 to Glu-38, Val-44 to Gln-53, Lys-55 to Asp-60, Gln-65 to Glu-70, Lys-89 to Glu-105, Glu-112 to Asp-142, Glu-147 to Arg-152, Glu-211 to Leu-216, Leu-227 to Ser-232, Lys-245 to Lys-255, Glu-278 to Tyr-291, Gln-297 to Arg-303.
759878	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 928 as residues: Trp-16 to Glu-21, Trp-45 to Pro-54, Ile-154 to Phe-162, Gly-174 to Leu-181.
760227	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 929 as residues: Arg-99 to Asp-104.
766051	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 931 as residues: Asp-10 to Lys-19.
768053	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 933 as residues: Ile-1 to Tyr-7, Phe-52 to Cys-61, Val-118 to Ser-125.
768055	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 934 as residues: Asp-39 to Ser-46, Lys-92 to Lys-99, Val-165 to Phe-172, Lys-252 to Ala-261, Asn-268 to Ala-273.
769685	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 935 as residues: Pro-129 to Arg-135.
771920	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 936 as residues: Pro-47 to Val-53, Asp-85 to Phe-97, Val-136 to Gly-144, Pro-166 to Glu-172, Leu-190 to Ser-197.
772790	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 937 as residues: Leu-5 to Trp-13, Met-20 to Leu-39, Ile-50 to Pro-63, Glu-66 to Ser-72, Leu-112 to Gln-120, Ala-141 to Lys-146, Tyr-165 to Asp-173.
772916	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 938 as residues: Lys-16 to Arg-25.
773632	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 940 as residues: Arg-1 to His-33.
774364	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 941 as residues: Ser-97 to Asn-103.
775355	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 942 as residues: Ser-40 to Ala-46.
775844	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 943 as residues: Leu-20 to Ser-31, Thr-38 to Val-47.
777760	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 944 as residues: Thr-22 to Ser-28, Thr-35 to Glu-42, Met-47 to Thr-55.
779837	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 945 as residues: Thr-26 to Arg-31, Leu-75 to Lys-100.
780769	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 946 as residues: Gly-1 to Asp-7, Lys-25 to Lys-31, Tyr-65 to Gly-70, Thr-100 to Arg-106, Pro-118 to Glu-124, Lys-162 to Ser-172, Leu-176 to Leu-182.
781445	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 947 as residues: Asn-33 to Lys-38, Leu-67 to Met-73, Ser-111 to Lys-121, Lys-127 to Leu-134, Pro-153 to Trp-158, Lys-237 to Met-249, Pro-280 to Tyr-292.
781531	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 948 as residues: Ala-8 to Pro-23, Gln-56 to Cys-61, Asn-66 to Pro-72.
783018	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 949 as residues: Asn-4 to Leu-17, Gly-19 to Phe-26, Pro-37 to Glu-43, Val-58 to Ser-64, Gln-80 to Gly-85.
783097	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 950 as residues: Pro-1 to Asp-9, Pro-24 to Gly-40, Pro-47 to Thr-55, Gln-62 to Ser-76.
784198	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 951 as residues: Met-1 to Arg-15, Leu-43 to Glu-48, Asp-55 to Asp-62, Ser-111 to Lys-160.
784868	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 952 as residues: Trp-8 to Gly-17, Glu-20 to Arg-35, Gly-40 to Cys-45, Ser-59 to Ser-64, Ala-73 to Leu-78, Val-85 to Leu-91, Arg-130 to Lys-135, Leu-138 to Glu-146, Pro-188 to

	Pro-194, Ser-206 to Cys-212, Ser-232 to Ala-246, Asp-293 to Ser-298.
785428	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 953 as residues: Arg-9 to Met-20, Glu-28 to Gly-33, Asn-49 to Lys-57, Thr-67 to Arg-75, Ser-81 to Leu-87, Glu-103 to Thr-109, Pro-115 to Ile-120, Asn-146 to Ser-174, Ser-177 to His-195, Met-197 to Ile-221, Asp-232 to Glu-240, Glu-289 to Phe-302, Cys-306 to Arg-314, Ser-357 to Ser-366, Lys-385 to Glu-401, Val-419 to Asp-427.
785845	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 954 as residues: Arg-41 to Asp-52, Pro-82 to Arg-94, Pro-102 to Gln-107, Gln-170 to Tyr-181, Glu-248 to Lys-254, Asp-277 to Gly-287, Ala-302 to Arg-308, Thr-367 to Gly-374.
785854	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 955 as residues: Asp-1 to Asp-17, Cys-59 to Asp-65.
787279	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 958 as residues: Lys-13 to Lys-20.
789002	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 959 as residues: Met-20 to Glu-29.
789008	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 960 as residues: Ser-24 to Arg-33, Ile-44 to Gly-57, Arg-63 to Asn-72, Ile-76 to Pro-82.
789555	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 961 as residues: Trp-106 to Thr-117, Trp-156 to Gln-163, Gln-173 to Asp-178, Gln-227 to Glu-233, Gln-255 to Glu-261, Glu-297 to Tyr-306, Thr-339 to Val-345, Leu-378 to Ile-385, Asp-414 to Lys-420, Cys-437 to Ile-444, Thr-491 to Gln-497, Glu-509 to Ser-515, Lys-526 to Glu-538.
789631	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 962 as residues: Thr-10 to Gly-18.
789779	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 963 as residues: Glu-1 to Ala-13, Leu-103 to Ser-109.
790387	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 964 as residues: His-1 to Ala-12.
790461	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 965 as residues: Glu-14 to Gly-23, Asp-47 to Met-53, Ala-55 to Thr-60, Pro-67 to Thr-73, Pro-78 to Gly-86, Tyr-91 to Pro-101, Ala-133 to Asn-139, Glu-169 to Gln-182, Glu-189 to Thr-195, Asn-197 to Arg-203, Gln-265 to Asp-271.
790931	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 966 as residues: Val-3 to Glu-13, Pro-29 to Pro-35, Glu-116 to Arg-125.
791176	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 967 as residues: Pro-1 to Pro-10, Pro-17 to Phe-28, Ser-61 to Pro-67.
792539	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 969 as residues: Ser-12 to Trp-17, Gln-20 to Lys-29, Asp-45 to Glu-51, Tyr-75 to Lys-83, Arg-103 to Gly-119, Gln-145 to Lys-155, Lys-166 to Leu-180, Thr-195 to Gly-203, Gln-209 to Val-219, Ser-222 to Ala-244, Leu-251 to Leu-260, Lys-277 to Lys-285.
792749	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 970 as residues: Ala-22 to Asp-41, Thr-61 to Met-66, Asp-191 to Lys-198, Arg-280 to Phe-287, Thr-289 to Lys-299, Pro-325 to Asp-332, Ser-351 to Arg-357.
793206	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 972 as residues: Gly-1 to Arg-6, Gln-11 to Arg-22, Glu-86 to Asp-91.
793626	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 974 as residues: Ser-1 to Gly-13, Gly-17 to Asn-26.
794417	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 975 as residues: Ser-7 to Trp-16.
795197	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 976 as residues: Ser-67 to Glu-73, Arg-129 to Gly-136, Phe-154 to Ala-161, Tyr-198 to Tyr-203, Pro-206 to Asp-212, Glu-222 to Cys-231.
795251	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 977 as residues: Phe-44 to Ser-50, Asp-57 to Pro-62, Asn-80 to His-90, Ser-110 to Ala-115, Ile-141 to Val-148, Glu-155 to Thr-173, Val-202 to Pro-217, Ile-221 to Val-229, Thr-

	233 to Ser-243, Val-253 to Thr-259, Ala-290 to Asn-320, Pro-322 to Ile-330, Ala-333 to Met-344, Val-362 to Leu-367, Asp-397 to Val-402, Glu-422 to Gly-448, Met-453 to Gly-460.
795752	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 978 as residues: Pro-52 to Asn-63, Pro-70 to Ile-79, Arg-93 to Gln-111.
796261	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 979 as residues: His-1 to Val-6, Cys-10 to Ser-15, Gly-26 to Ser-34, Trp-36 to Pro-58, Pro-96 to Thr-102, Pro-111 to Tyr-116, Phe-131 to Gly-138, Pro-184 to Leu-190, Glu-237 to Gly-244, Pro-255 to Lys-267, Lys-271 to Leu-280.
796933	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 980 as residues: Arg-1 to Pro-14, Gln-47 to Cys-52, Asn-57 to Pro-63, Ser-277 to Lys-282.
799424	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 981 as residues: Tyr-18 to Leu-27, Met-50 to Met-60, Leu-169 to His-178, Ser-233 to Ser-241.
799698	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 982 as residues: Pro-16 to Pro-21, Ala-54 to Glu-61, Ala-96 to Gly-105.
800351	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 983 as residues: Gly-21 to Gln-34, His-39 to Lys-53, Ser-63 to Tyr-71.
800573	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 984 as residues: Asp-33 to Arg-39, Ala-43 to Leu-48, Glu-256 to Gln-266, Gly-305 to Ile-311, Pro-314 to Ala-320, Gln-388 to Asn-394.
805815	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 985 as residues: Arg-1 to Lys-22, Ser-34 to Arg-48, Thr-64 to Arg-70, Pro-81 to Phe-89, Arg-148 to Asn-154, Tyr-172 to Asp-185, Ser-205 to Asp-216, Tyr-278 to His-285, His-294 to Pro-299, Glu-326 to Gly-333, Gly-336 to Ser-345.
806445	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 986 as residues: Arg-15 to Gly-24, Lys-26 to Trp-32.
810309	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 987 as residues: Pro-33 to Phe-50, Ile-57 to Gly-62, Gln-72 to Asn-85, Ala-87 to Thr-172.
811022	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 988 as residues: Ala-1 to Met-11, Gln-62 to Trp-68, Ala-89 to Val-99.
811023	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 989 as residues: Tyr-54 to Lys-61, Met-64 to Thr-70.
811143	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 990 as residues: Ala-1 to Ser-7, Ser-19 to Gly-36, Arg-53 to Pro-58, Thr-87 to Glu-102, Arg-115 to Tyr-120, Thr-159 to Thr-164, Ala-171 to Ser-179, Ala-206 to Pro-217, Pro-224 to Ala-233, Arg-253 to Ser-259.
813000	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 993 as residues: Tyr-25 to Lys-30, Lys-36 to Ile-43, Lys-52 to Gln-69, Glu-76 to Asp-81, Arg-92 to Trp-104, Leu-120 to Lys-126, Ser-129 to Ser-135, Ser-139 to Thr-156, Pro-165 to Glu-178, Ser-181 to Thr-186, Tyr-196 to Lys-201, Cys-225 to Lys-230, Glu-234 to Ser-242.
813431	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 995 as residues: Leu-23 to His-29, Pro-38 to Leu-46, Ser-59 to Gly-68, Pro-85 to Lys-108, Arg-119 to Phe-124, Ser-139 to Lys-156.
813450	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 996 as residues: Asn-1 to Trp-10.
813478	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 997 as residues: Ala-8 to Arg-14, Ile-64 to Thr-69, Val-94 to Asp-101, His-112 to Gln-117, Tyr-139 to Glu-145, Tyr-195 to Cys-208, Gly-216 to Gly-223, Asp-297 to Ser-307, Gly-378 to Leu-383, Ile-391 to Pro-404, Asn-451 to Ser-466.
813505	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 998 as residues: Thr-1 to Ala-20, Pro-22 to Lys-27, His-44 to Thr-51, Pro-53 to Thr-60, Arg-62 to Lys-79, Lys-97 to Asn-103, Pro-139 to Lys-144.
815552	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 999 as residues: Pro-1 to Ser-6, Pro-25 to Cys-31, Arg-142 to Lys-150.

815606	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1000 as residues: Arg-1 to Ala-11.
816048	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1001 as residues: Ala-13 to Thr-24, Glu-30 to Gln-39, Arg-69 to Gly-77, Gln-119 to Gly-126, Tyr-156 to Asn-162, Ser-184 to Gly-191.
823981	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1004 as residues: Lys-1 to Cys-7, Ala-11 to Lys-17, Glu-90 to Ile-95, Asn-141 to Arg-148, Leu-158 to Ala-163, Ala-171 to Thr-177.
824364	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1005 as residues: Gln-43 to Gly-54.
824423	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1006 as residues: Cys-33 to Arg-42, Val-53 to Met-63, Lys-71 to Lys-78, Gly-107 to Pro-118, Ala-159 to Leu-165, Val-272 to Arg-284, Pro-422 to Pro-427, Arg-437 to Gln-443, Ala-474 to Asp-482, His-519 to Cys-525, Ala-529 to Gln-535, Arg-540 to Gln-548.
825279	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1007 as residues: Ser-8 to Arg-14, Asp-23 to Gly-28, Ser-30 to Pro-37, His-52 to Ala-57, Pro-65 to Ser-74, Pro-112 to Ser-118, Ala-181 to Pro-189.
825548	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1009 as residues: Pro-2 to Ser-9.
825725	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1010 as residues: Pro-1 to Gly-8, Leu-95 to Lys-100, Glu-118 to Thr-125, Ser-162 to Lys-167, Arg-201 to Tyr-206.
827079	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1012 as residues: Arg-9 to Ser-17.
827153	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1013 as residues: Val-32 to Ala-44, Pro-49 to Ser-57, Gln-77 to Gly-82, Asp-116 to Gly-127, Arg-165 to Asn-172.
827351	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1014 as residues: Gly-5 to Lys-11, Ser-59 to Lys-67, Glu-130 to Arg-136, Asn-176 to Leu-183.
827503	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1015 as residues: Asp-61 to Val-67, Arg-113 to Asp-119, Ser-180 to Gly-191, Pro-199 to Ser-211, Ser-228 to Asn-238, Gly-276 to Ser-286, His-343 to Gly-351, Gln-354 to Arg-366, Leu-368 to Gln-382, Pro-393 to Ser-400, Asp-412 to Cys-418, Gly-430 to Leu-435, Gln-445 to Asp-450, Lys-484 to Val-491, Leu-513 to Gly-520.
827563	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1016 as residues: Pro-69 to Ala-81, Pro-84 to Gly-91, Ala-106 to Leu-112, Arg-216 to Lys-224, Trp-239 to Gly-250.
827565	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1017 as residues: Ala-1 to Ser-8, Ser-88 to Gly-96, Asn-121 to Asp-128, Cys-191 to Gly-196, Met-242 to Thr-248.
827893	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1018 as residues: Ser-41 to Ala-50, Glu-72 to His-77, Ala-120 to Glu-125, Thr-144 to Ile-153.
828072	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1019 as residues: Lys-30 to Leu-35.
828241	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1021 as residues: Gly-35 to Phe-45, Pro-47 to Arg-55, Glu-62 to Leu-70, Arg-102 to Tyr-111, Phe-128 to Gln-134, Val-139 to Met-144, Ser-180 to Gly-188, Lys-214 to Leu-219, Ser-241 to Glu-246, Phe-292 to Thr-298.
828287	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1022 as residues: Ala-12 to Thr-21, Ala-23 to Gly-31, Leu-43 to Gly-51, Lys-127 to Val-134.
828371	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1024 as residues: Gln-1 to Ala-6, Lys-50 to Pro-71, Pro-98 to Ser-111, Asp-148 to His-164, Asp-185 to Arg-191, Asp-238 to Gly-244, Pro-262 to Cys-274.
828403	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1025 as residues: Gly-1 to Trp-15, Arg-73 to Leu-82.
828501	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1026 as

	residues: Arg-99 to Arg-105, Pro-171 to Ser-176, Lys-189 to Val-195, Lys-291 to Ala-296.
828527	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1028 as residues: Glu-58 to Cys-63.
828538	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1029 as residues: Pro-9 to Thr-24, Thr-46 to Gly-52, Ser-70 to Thr-76, Ser-142 to Thr-149, Pro-154 to Ser-171, Glu-189 to Ser-196.
828541	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1030 as residues: Arg-9 to Pro-23, Gln-64 to Leu-69, Asp-76 to Asn-83, Lys-88 to Gln-93, Pro-129 to Thr-135, Gly-194 to Gly-203, Asp-223 to Gly-231, Thr-265 to Ile-281, Leu-287 to Lys-297.
828549	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1031 as residues: Pro-22 to Asn-28.
828562	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1032 as residues: Arg-26 to Asp-33, Asp-42 to Pro-58, Thr-63 to Lys-70, Thr-103 to Asp-114.
828576	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1033 as residues: Arg-11 to Gly-17, Pro-26 to Gly-31, Ala-48 to His-58.
828602	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1034 as residues: Tyr-1 to Met-8, Leu-10 to Lys-26, Pro-47 to Pro-54, Lys-128 to Ser-133.
828628	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1035 as residues: Thr-124 to Thr-129, Gly-136 to Phe-142, Asp-164 to His-171, Asp-180 to Tyr-194.
828684	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1037 as residues: Ser-16 to Thr-22, Arg-39 to Ala-51, Arg-60 to Gly-65, Thr-67 to Arg-90, Lys-109 to Gln-125, Ser-146 to Arg-159, Gln-166 to Thr-176, Glu-192 to Tyr-197, Val-267 to His-279, Ala-351 to Gly-356, Phe-363 to Gly-368, Gly-387 to Arg-392, Asp-488 to Ala-498.
828727	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1038 as residues: Gly-14 to Val-21, Asp-40 to Gln-57, Gln-86 to Tyr-93, Gln-98 to Asp-104, Lys-124 to Asp-130, Gln-138 to Cys-156, Tyr-170 to Gln-175, Gln-196 to Ala-201.
828734	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1039 as residues: Asp-5 to Trp-19, Ile-37 to Pro-42, Asp-52 to Asp-72, Glu-85 to Ser-92, Ser-107 to Leu-117, Asp-128 to His-147.
828842	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1041 as residues: Ala-25 to Phe-32, Glu-54 to Ser-61, Thr-74 to Glu-79, Glu-99 to Lys-105, Glu-112 to Glu-121.
828843	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1042 as residues: Pro-3 to Asn-11, Gln-46 to Ala-51, Asn-62 to Lys-74, Val-108 to Gln-113, Arg-119 to Gly-163, Ala-223 to Lys-237.
828851	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1043 as residues: Thr-3 to Lys-8, Leu-63 to Val-70, Lys-141 to Val-149, Ile-326 to Thr-333.
828856	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1044 as residues: Leu-1 to Gly-10.
828862	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1045 as residues: Pro-1 to Pro-9, Arg-81 to Glu-87, Gln-114 to Glu-119.
828870	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1046 as residues: Ser-1 to Gly-18, Trp-25 to Gly-31, Arg-46 to Ser-52, Ala-103 to Ala-108, Ser-154 to Gly-165, Gln-228 to Pro-236, Ser-284 to Gly-291, Ala-321 to Asp-327, Lys-377 to Asn-394, Asp-406 to Ser-416.
828873	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1047 as residues: Tyr-15 to Gly-20, Asn-72 to Asp-80, Pro-105 to Pro-110, Gln-149 to Arg-154, Glu-161 to Gly-167, Ile-312 to Asp-318, Lys-353 to Leu-361, Arg-379 to Thr-385, Pro-423 to Trp-435, Pro-437 to Cys-444, Asn-450 to Met-466.
828892	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1048 as residues: Asp-19 to Asn-25, Gly-67 to Glu-79.
828893	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1049 as



	residues: Ser-55 to Thr-60, Glu-97 to Ser-103, Thr-164 to Glu-170, Gly-192 to Gly-197, Leu-204 to Ser-218, Ala-238 to Ser-250, Asp-265 to Tyr-292, Gly-298 to Gly-307, Gly-351 to Met-359, Phe-389 to Glu-400.
828897	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1050 as residues: Phe-28 to Arg-33.
828910	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1051 as residues: His-1 to Ile-13, Arg-20 to Glu-64, Arg-83 to Gln-89, Tyr-145 to Asp-152.
828927	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1052 as residues: Glu-10 to Pro-21, Thr-54 to Gly-60, Cys-79 to Glu-90, Lys-154 to Lys-159.
828932	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1053 as residues: Arg-1 to Arg-9, Phe-54 to Pro-60, Gln-74 to Gly-90, Asn-114 to Gly-119, Cys-124 to Ser-132, Thr-139 to Leu-151, Asp-171 to Lys-182, Ala-188 to Leu-193, Val-203 to Trp-222, Lys-230 to Glu-236, Glu-244 to Asp-250, Leu-258 to Gly-268, Gly-283 to Asp-288, Ser-291 to Trp-297, Gly-300 to Ala-308.
828933	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1054 as residues: Glu-21 to Ser-34, Thr-130 to Tyr-138.
828941	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1055 as residues: Gly-1 to Ala-6, Pro-15 to Gly-22, Asn-160 to Gln-177, Asn-193 to Asp-199, Glu-205 to Leu-211.
828963	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1057 as residues: Pro-48 to Gly-54, Ser-56 to Ser-76, Lys-102 to Pro-107, Ser-146 to Gly-153, Ser-208 to Arg-213, Tyr-285 to Leu-299, Pro-314 to Phe-319, Asn-322 to Asn-327.
828964	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1058 as residues: Thr-36 to Cys-47.
828966	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1059 as residues: Gly-1 to Ser-16, Met-26 to Pro-31, Lys-128 to Glu-134, His-165 to Gln-170, Asp-207 to Asn-216, Pro-348 to Arg-359, Lys-433 to Ala-439, Gly-448 to Tyr-457.
828967	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1060 as residues: Met-135 to Arg-141, Gly-149 to Lys-166, Ile-188 to Ser-196, Gly-203 to Tyr-213, Gln-267 to Asp-278, Arg-298 to Trp-317, Leu-319 to Leu-326, Gln-344 to Thr-349, Pro-410 to Ser-419, Ala-500 to Ala-510.
828977	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1061 as residues: Gly-32 to Tyr-42, Asn-52 to Glu-58, Ser-78 to Gly-87, Lys-97 to Gly-109, Glu-116 to Arg-127, Pro-147 to Pro-152, Pro-162 to Asn-171, Leu-179 to Glu-185, Ile-203 to Glu-208, Val-222 to Gln-228.
828978	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1062 as residues: Asp-24 to Lys-30, Arg-49 to Lys-62, Arg-121 to Thr-149, Gly-163 to Leu-171, Ala-186 to Glu-195, Glu-216 to Ser-221, Ile-229 to Ser-236, Lys-258 to Lys-264, Lys-305 to Arg-313.
829001	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1064 as residues: Thr-11 to Cys-24, Arg-48 to His-55, Arg-62 to Gly-70.
829003	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1065 as residues: Lys-14 to Gly-22, Ser-61 to Asp-66, Cys-80 to Lys-91, Lys-97 to Arg-107, Gly-135 to Asn-146, Lys-198 to Lys-208, Met-221 to Thr-227, Phe-244 to Gly-256, Asp-292 to Gln-300.
829016	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1066 as residues: Arg-1 to Asp-11, Ala-17 to Gln-25, Glu-30 to His-37, Cys-39 to Thr-44, Asn-86 to Phe-93.
829027	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1067 as residues: Pro-1 to Ser-7, Thr-45 to Leu-63, Arg-113 to Thr-118, Pro-172 to Gly-182.
829028	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1068 as residues: Ser-1 to Gln-19, Gly-32 to Phe-39, Ala-95 to Arg-116, Lys-122 to Glu-142, Ile-148 to Asn-156, Ser-168 to Asn-191, Ala-196 to Thr-204, Ser-289 to Lys-304, Leu-308 to Ser-314, Thr-332 to Ile-341.
829034	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1070 as residues: Ser-32 to Ala-43, Thr-62 to Glu-69, Phe-128 to Thr-156, Thr-179 to His-188.

	Gly-196 to Glu-203, Pro-205 to Ala-219, Gln-221 to Ile-230, Pro-246 to Thr-255, Thr-271 to His-276, Asn-324 to Thr-344, Pro-364 to Ala-370, Tyr-427 to Arg-434, Gly-440 to Pro-445.
829036	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1071 as residues: Leu-16 to Phe-21, Thr-69 to Lys-74, Asn-87 to His-92, Thr-126 to Leu-137, Phe-154 to Lys-164, Ala-171 to Asp-178, Ile-192 to Thr-203, Glu-261 to Ser-273.
829049	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1072 as residues: Gly-50 to Tyr-59.
829073	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1073 as residues: Asn-1 to Met-6, Asn-26 to Ser-35, Pro-43 to Ile-54.
829075	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1074 as residues: Gly-14 to Pro-30, Ser-64 to Ser-69, Asn-97 to Arg-109.
829076	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1075 as residues: Lys-84 to Gly-94, Asn-142 to Ile-147.
829080	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1076 as residues: Gly-13 to Trp-23, Pro-39 to Gly-44.
829087	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1077 as residues: Pro-13 to Arg-24.
829095	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1079 as residues: Pro-8 to Pro-13.
829118	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1081 as residues: Arg-7 to Val-12, Ile-52 to Thr-70, Ser-86 to Asp-91, Thr-126 to Ser-138.
829152	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1082 as residues: Asp-12 to Ser-19.
829160	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1083 as residues: Ala-7 to Arg-20.
829163	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1084 as residues: Ser-23 to Asp-32, Val-36 to Glu-59, Ser-65 to Asn-76, Cys-91 to Ser-102, Pro-108 to Leu-115, Thr-151 to Gln-164, Glu-167 to Lys-176.
829176	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1085 as residues: His-1 to Asn-8, Cys-22 to Arg-27, Gly-34 to Ser-44, Tyr-60 to Ser-65, Ser-118 to Gln-123, Ser-149 to Trp-154, Pro-159 to Gly-168, Gln-207 to Leu-220.
829204	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1086 as residues: Ala-11 to Ser-19, Thr-104 to Lys-133.
829207	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1087 as residues: Lys-5 to Ser-11, Pro-31 to Ser-37, Pro-87 to Asp-92, Asp-115 to Lys-123, Ser-149 to Arg-155, Thr-243 to Pro-253.
829228	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1088 as residues: Pro-1 to Trp-6, Leu-73 to Tyr-79, Glu-108 to Thr-117, Asp-136 to Asp-142, Ser-201 to Pro-207, Leu-224 to Pro-233, Val-242 to Ala-248, Ser-312 to Leu-319, Val-349 to Ser-359, Ala-362 to His-368, Thr-370 to Gly-376, Lys-403 to Tyr-409, Glu-426 to Arg-431, Lys-455 to Asp-460, Arg-499 to Thr-505, Asp-561 to Ser-570, Ser-665 to Ser-673.
829252	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1089 as residues: Thr-9 to Val-16.
829269	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1091 as residues: Ser-1 to Glu-7, Lys-76 to Gln-83.
829277	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1092 as residues: Lys-88 to Phe-97, Thr-106 to Leu-120, Thr-147 to Pro-152, Pro-173 to Met-179.
829290	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1093 as residues: Pro-1 to Pro-19, Pro-25 to Lys-30.
829308	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1096 as residues: Met-26 to Asn-37, Glu-42 to Gln-51, Thr-68 to Ser-95, Ala-97 to Lys-113, Asp-156 to Val-161, Val-208 to Asp-215, Pro-217 to Ala-228.
829349	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1097 as

	residues: Asn-18 to Lys-24, Asp-87 to Asn-94, Glu-116 to Gly-125.
829354	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1098 as residues: Ala-1 to Asn-16, Pro-36 to Arg-43.
829388	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1099 as residues: Glu-91 to Pro-100, Tyr-122 to Thr-127, Thr-168 to Val-173, Thr-210 to Asp-215, Leu-219 to Gly-224, Gly-232 to Val-237.
829626	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1101 as residues: Gly-145 to Ala-151.
829730	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1102 as residues: Pro-22 to His-27, Pro-87 to Asp-93, Arg-109 to Lys-115, Arg-172 to Glu-177, Glu-219 to Asp-226.
829892	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1103 as residues: Tyr-36 to Ala-46, Val-58 to Asn-63, Glu-73 to Asn-78, Asn-90 to Asn-95, Ser-125 to Leu-133, Glu-143 to Pro-150, Phe-186 to Leu-191, Leu-274 to Glu-281, Lys-303 to Phe-308, Thr-323 to Gly-330.
829938	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1105 as residues: Thr-1 to Pro-14, Ser-36 to Thr-57, Ser-81 to Thr-91, Glu-103 to Leu-110, Glu-124 to Tyr-130, Ala-135 to Lys-140, Leu-146 to Glu-162, Lys-167 to Glu-172, Glu-199 to Val-213.
829969	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1106 as residues: Arg-12 to His-21, Arg-77 to Ser-88.
829982	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1107 as residues: Arg-6 to His-14, Ser-40 to Met-47, Thr-68 to Cys-74, Ile-97 to His-115, Gly-118 to Pro-124.
830007	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1108 as residues: Ala-7 to Ala-16.
830019	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1109 as residues: Leu-21 to Pro-27.
830073	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1110 as residues: Gly-16 to Val-22, Pro-45 to Lys-50, Phe-58 to Arg-65, Ser-135 to Gly-141, Gly-153 to Ser-158, Pro-160 to Tyr-168.
830148	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1114 as residues: Asp-63 to Lys-81, Gly-101 to Gly-108, Pro-182 to Ala-200, Pro-210 to Met-216, Pro-235 to Gly-243.
830183	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1117 as residues: Pro-29 to Lys-37, Pro-40 to Val-47, Tyr-62 to His-67.
830194	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1118 as residues: Ala-43 to Lys-51, Glu-66 to Leu-74, His-81 to Glu-88, Arg-98 to Ser-105, Gly-111 to Gln-116, Leu-166 to Lys-182, Leu-261 to Ala-273, Glu-294 to Arg-302, Glu-335 to Asp-347.
830207	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1119 as residues: Pro-14 to Pro-48, Asp-55 to Gly-61, Lys-94 to Asn-99, Ala-107 to Ser-115, Ile-117 to Asn-124, Thr-133 to Cys-139, Thr-142 to Ile-147, Gly-163 to Ser-169.
830242	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1120 as residues: Glu-29 to Lys-34, Leu-151 to Gln-157, Arg-160 to Ser-171, Gln-177 to Pro-190.
830328	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1121 as residues: Pro-18 to Met-24, Glu-66 to Gln-78, Ala-85 to Arg-93, Glu-99 to His-108, Leu-114 to Asp-137, Pro-171 to Gln-176, Gly-205 to Leu-213.
830340	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1122 as residues: Gly-12 to Lys-18, Arg-46 to Glu-56, Leu-67 to Gly-73, Ala-91 to Tyr-112.
830341	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1123 as residues: Leu-14 to Gln-20, Asn-34 to Glu-41, Lys-193 to Asn-198.
830351	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1124 as residues: Pro-1 to Leu-13, Gly-42 to Pro-51, Arg-64 to Ala-69, Met-104 to Asp-109, Cys-125 to Trp-132, Asp-161 to Trp-175, Glu-206 to Glu-218.

830358	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1125 as residues: Cys-75 to Thr-81.
830400	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1127 as residues: Pro-1 to Gly-6, Arg-17 to Arg-33, Glu-151 to Trp-157, Ile-187 to Tyr-193, Lys-249 to Glu-258, Asn-289 to Ser-294, Pro-340 to Lys-353.
830437	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1128 as residues: Ala-87 to Ser-94, Asp-104 to Arg-112, Leu-114 to Asp-119, Ser-186 to Thr-202.
830466	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1130 as residues: Pro-14 to Ile-24, Thr-35 to Phe-42, Ser-45 to Asn-57, Pro-65 to Trp-89.
830497	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1131 as residues: Thr-1 to Leu-9, Ser-46 to Leu-56, Glu-117 to Lys-124, Pro-129 to Asp-135, Ala-144 to Gln-150, Gly-156 to Lys-162, Phe-182 to Pro-187, Pro-196 to Gln-201, Lys-217 to Asp-227.
830511	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1132 as residues: Lys-13 to Cys-44, Lys-101 to Arg-109, Gln-120 to Gly-129.
830540	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1135 as residues: Leu-31 to Lys-37, Arg-48 to Asn-54.
830550	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1136 as residues: Pro-8 to Cys-15, Val-80 to Cys-85.
830567	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1137 as residues: Lys-28 to Leu-33, Pro-60 to Ser-66.
830586	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1138 as residues: Pro-1 to Gln-15, Arg-33 to Leu-40, Arg-72 to Ser-78, Leu-98 to Asp-103, Phe-116 to Gly-124, Pro-152 to Arg-158, Thr-193 to Pro-200, Leu-213 to Phe-219, Asp-229 to Lys-237, Lys-246 to Lys-258, Arg-275 to Thr-280, Thr-306 to Lys-312, Leu-320 to Arg-328, Ala-335 to Asn-340, Gly-342 to Trp-349, Cys-364 to Pro-372.
830632	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1139 as residues: Ala-6 to Thr-14, Arg-143 to Lys-148.
830659	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1142 as residues: Thr-32 to Tyr-40, Ala-67 to Gln-82, Arg-128 to Thr-133, Leu-137 to Thr-146, Pro-187 to Ser-193.
830696	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1143 as residues: Glu-83 to Lys-91.
830743	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1145 as residues: Pro-11 to Phe-16, Thr-48 to Ser-60.
830770	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1146 as residues: Thr-36 to Thr-44.
830830	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1147 as residues: Lys-73 to Thr-78, Pro-84 to Pro-96, Lys-107 to Glu-124, Ile-142 to Cys-153, Asp-179 to Asn-184.
830838	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1148 as residues: Ser-17 to Arg-22, Gly-48 to Val-56, Asn-217 to Asp-223, Thr-238 to Asn-243.
830851	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1149 as residues: Arg-1 to Val-7, Ala-156 to Phe-162, Arg-216 to Lys-239.
830856	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1151 as residues: Trp-29 to Gly-35, Thr-41 to His-47, Val-95 to Lys-111.
830862	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1152 as residues: Arg-14 to Val-22, Ala-24 to Gly-35, Arg-37 to Lys-58, Ala-88 to Ala-94, Lys-164 to Ser-172.
830879	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1153 as residues: Cys-34 to Leu-44, Ser-60 to Gly-69, Asp-118 to Gly-123, Cys-148 to Gln-154.
830919	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1154 as residues: Pro-1 to Ser-41, Arg-53 to Pro-61, Arg-66 to Gln-132.

830969	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1155 as residues: His-17 to Pro-27, Phe-31 to Val-38, Gly-53 to Thr-62.
830991	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1156 as residues: Arg-1 to Pro-14, Ala-44 to Ser-56, His-69 to Lys-75, Gly-89 to Lys-98, Tyr-101 to Tyr-121, Pro-123 to Thr-131, Pro-149 to Gly-171, Tyr-186 to Glu-192.
831002	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1157 as residues: Glu-63 to Asn-73, Pro-114 to Tyr-122, Ser-194 to Glu-201, Ile-263 to Ser-269.
831003	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1158 as residues: Ile-9 to Leu-17, Asp-63 to Gly-70, Leu-112 to Ala-128.
831021	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1159 as residues: Asn-6 to Asp-12.
831036	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1160 as residues: Ser-6 to Ser-25, Tyr-37 to Lys-42, Arg-49 to Tyr-54, Pro-56 to Glu-61, Gln-72 to Cys-77, Lys-104 to Glu-110, Lys-134 to Met-142, Asp-147 to Arg-158, Arg-189 to Asn-194.
831071	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1161 as residues: Thr-41 to Arg-49, Glu-137 to Asp-142, Tyr-158 to Glu-163, Arg-184 to Thr-199, Arg-239 to Gly-253, Pro-297 to Gly-304, Pro-319 to Ile-327, Leu-347 to Val-356, Asn-435 to Leu-441, Asp-443 to Ser-452, Ala-457 to Thr-462, Asp-479 to Arg-484, Gly-510 to His-516, Glu-555 to Thr-565, Asp-597 to Ser-602, Thr-615 to Asp-622, Val-653 to Leu-661, Ala-684 to Arg-697, Ser-704 to Glu-712, Ala-731 to Ala-737, Lys-800 to Met-805.
831099	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1163 as residues: Leu-12 to Gly-18, Leu-93 to Ile-98, Lys-165 to Ser-183, Thr-198 to Lys-211, Glu-232 to Gly-237, Pro-239 to Gly-249, Arg-257 to Asp-278, Cys-292 to Glu-297, Arg-306 to Ser-316, Asp-323 to Asn-331, Glu-347 to Gly-354, Thr-365 to Asn-370, Pro-390 to Thr-396, Asn-420 to Ser-433, Val-440 to Gln-451, His-457 to Asp-465, Phe-533 to Met-538, Ala-540 to Tyr-550, Pro-560 to Lys-565.
831113	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1164 as residues: Ser-26 to Arg-33, Pro-51 to Thr-56, Cys-82 to Asp-94, Pro-104 to Gly-128.
831120	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1165 as residues: Ala-39 to Leu-47, Val-49 to Lys-55, Thr-66 to Asp-75, Thr-85 to Gly-104, Ala-114 to Gly-147, Pro-176 to Thr-199, Ser-205 to Ser-221, Glu-233 to Lys-240, Lys-246 to Asp-251, Glu-256 to Ser-267, Ser-291 to Leu-302, Thr-305 to Asp-324, Cys-336 to Val-345, Phe-367 to Cys-375.
831172	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1166 as residues: Pro-1 to Gly-7, His-119 to Gly-125, His-145 to Asp-151, Leu-173 to Leu-178.
831178	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1167 as residues: Glu-37 to Asn-42, Ser-48 to Thr-54, Pro-101 to Glu-106.
831184	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1168 as residues: Gln-1 to Pro-29.
831203	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1169 as residues: Thr-1 to Ser-6, Leu-10 to Asn-23, Gln-31 to Arg-36, Arg-43 to His-49, Ala-58 to Leu-63, Gln-81 to Asp-105, Glu-113 to Ile-122, Pro-132 to Lys-137, Ser-175 to Gln-181.
831257	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1173 as residues: Arg-87 to Leu-96, His-104 to Lys-112, Asp-144 to Pro-150.
831277	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1174 as residues: Arg-1 to Gly-13.
831317	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1175 as residues: Ser-97 to Lys-102, Thr-108 to Gly-119, Lys-151 to Gly-157, Pro-204 to Glu-210, Gln-224 to Gly-230, Val-238 to Cys-245, Met-279 to Asn-284, Gly-332 to Glu-349.
831339	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1176 as

	residues: Met-1 to His-19, Pro-21 to Pro-27, Ala-49 to Gly-59, Pro-82 to Ala-104.
831363	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1177 as residues: Thr-1 to Ser-14, Thr-82 to Pro-89, Met-102 to Ala-109, Phe-117 to Ile-124, Asp-142 to Arg-148, Thr-196 to Trp-205, Gln-304 to Leu-310, Gln-325 to Ser-331, Gly-387 to Thr-393, Ala-415 to Lys-430, Pro-469 to Pro-477, Gly-500 to Ile-506, Arg-521 to Gly-529, Pro-534 to Gly-541, Gln-553 to Lys-558, Ala-571 to Glu-579.
831385	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1180 as residues: Ser-1 to Thr-9, Ala-32 to Asn-37, Thr-40 to Tyr-49, Gln-71 to Thr-80.
831390	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1181 as residues: Trp-50 to Gly-55, Leu-109 to Val-119, Phe-146 to Asp-158, Ser-165 to Trp-172, Phe-192 to Ile-197, Leu-241 to Asp-252, Lys-268 to Pro-273, Ser-310 to Lys-315, Asp-334 to Ala-342, Pro-348 to Tyr-353.
831391	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1182 as residues: Ser-28 to Pro-38, Pro-45 to Cys-55, Leu-70 to Ser-77, Glu-98 to Phe-104, Asp-112 to Ser-122, Thr-152 to Lys-158.
831405	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1183 as residues: Asp-47 to Ser-55, Glu-86 to Cys-95, Glu-105 to Gly-113, Gln-133 to Asn-138, Arg-144 to Asp-156.
831476	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1185 as residues: Gln-28 to Gly-33, Asp-41 to Trp-47, Asn-51 to Ser-56, Ser-73 to Asn-83, Trp-111 to Asn-117, Leu-133 to Gln-138, Arg-143 to Tyr-150, Thr-156 to Glu-165.
831488	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1186 as residues: Glu-53 to Asn-59, Lys-97 to Phe-104, Lys-133 to Ala-138.
831519	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1188 as residues: Ser-17 to Gly-25, Thr-47 to Leu-59, His-71 to Arg-77, Pro-83 to Gln-90, Tyr-133 to Ser-143, Arg-160 to Gly-169, Pro-188 to Val-193, Glu-202 to Glu-208, Leu-283 to Arg-288, Glu-295 to Leu-301, Ala-327 to Leu-333, Ala-426 to Pro-433, Leu-444 to Leu-456, Asn-492 to Ala-498.
831550	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1190 as residues: Arg-1 to Gly-15, Ser-42 to Trp-51, Pro-59 to Arg-64.
831560	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1191 as residues: Arg-58 to Asp-64.
831570	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1193 as residues: Thr-61 to Cys-74, Gly-92 to Cys-104, Cys-128 to Ser-133, Asn-179 to Gly-186, Ser-198 to Cys-226, Asn-265 to Ser-274, Ser-280 to Ile-285, Ser-291 to Asp-297, Leu-305 to Gly-315, Phe-317 to Gly-333, Asp-336 to Leu-344, Phe-354 to Cys-361.
831596	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1195 as residues: Gln-80 to Gly-85.
831627	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1196 as residues: Arg-1 to Ser-12, Gly-94 to Thr-106, Ser-161 to Leu-169, Ser-183 to Val-188, Glu-199 to Cys-205, Ser-246 to Ile-251, Leu-271 to Thr-276.
831649	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1197 as residues: Tyr-32 to Lys-39.
831664	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1198 as residues: Lys-1 to Asp-42, Arg-71 to Ala-76, Gln-138 to Phe-145, Lys-170 to Thr-178, Cys-186 to Asp-192.
831684	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1200 as residues: Ile-135 to Ala-140, Tyr-151 to Asn-157, Ser-183 to Ile-190, Gly-196 to Lys-201, Lys-226 to Lys-232, Asn-246 to Thr-252, Asp-293 to Gly-300.
831687	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1201 as residues: Ala-56 to Tyr-63.
831726	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1202 as residues: Arg-3 to Arg-15, Lys-34 to Thr-39, Asn-41 to Lys-59, Ala-104 to Glu-110.
831762	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1204 as residues: Pro-83 to Leu-91, His-116 to Ala-122, Pro-141 to Ser-155.
831848	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1206 as

	residues: Gln-16 to Thr-23.
831861	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1207 as residues: Ala-20 to Lys-26, Pro-59 to Pro-67, Ser-104 to Thr-121, Gln-130 to Gln-136.
831866	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1208 as residues: Arg-11 to Ala-24, Ile-39 to Lys-45, Arg-76 to Pro-85, Lys-124 to Lys-130, Pro-139 to Ser-153, Ala-156 to Glu-170, Ser-179 to Thr-184, Asp-234 to Gly-244, Gly-321 to Lys-329.
831899	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1210 as residues: Asp-11 to Trp-16, Pro-37 to Thr-44, Pro-74 to Pro-82, Arg-112 to Gln-119, Cys-126 to Arg-138, Arg-199 to Thr-204.
831913	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1211 as residues: Pro-22 to Cys-27, Glu-54 to Glu-60, Asp-112 to Phe-117, Lys-183 to Asp-189, Gln-277 to Tyr-282, Pro-325 to Arg-331, Gly-336 to Tyr-346.
831985	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1213 as residues: Cys-7 to Asp-12, Pro-21 to Gly-26.
831986	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1214 as residues: Cys-1 to Ser-7, Ala-62 to Gly-72, Pro-83 to Ala-101.
832010	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1215 as residues: Leu-1 to Lys-21, Glu-39 to Cys-47, Lys-49 to Gln-61, His-64 to Gly-76, Thr-83 to Lys-90, His-92 to Ile-99.
832016	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1216 as residues: Phe-28 to Asn-33, Leu-55 to Tyr-80, Pro-126 to Gly-132, Pro-162 to Gly-169, Pro-194 to Arg-201.
832041	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1217 as residues: Lys-55 to Met-63, Arg-120 to Asp-132, Gly-266 to Glu-281, Val-313 to Thr-319, Leu-361 to Ser-370, Tyr-406 to Met-412, Leu-465 to Trp-470.
832049	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1219 as residues: Leu-80 to Lys-87, Lys-102 to Thr-109, Glu-195 to Thr-200, Thr-203 to Asp-209.
832122	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1220 as residues: Asn-29 to Phe-36, Asp-41 to Ser-50.
832197	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1222 as residues: Glu-61 to Leu-70.
832237	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1223 as residues: Lys-28 to Val-35, Arg-41 to Arg-55, Pro-76 to Thr-87.
832246	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1224 as residues: Arg-17 to Asn-23, Arg-90 to Gly-95, Leu-114 to Glu-121, Pro-153 to Asp-158.
832256	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1225 as residues: Gly-15 to Asn-22.
832280	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1226 as residues: Glu-1 to Trp-16, Ala-32 to Glu-38, Ala-49 to Gln-55, Pro-61 to Gln-66, Ala-78 to Asp-100, Leu-107 to Thr-127, Pro-133 to Phe-157, Pro-160 to Thr-171, Leu-179 to Asp-196, Asp-201 to Lys-222, Pro-249 to Ile-254, Val-258 to Val-263, Thr-268 to Ser-277, Thr-279 to Ala-295, Gly-299 to Phe-327, Val-335 to Asp-346, Lys-366 to Asp-378.
832285	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1227 as residues: Phe-18 to Leu-23.
832294	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1228 as residues: Pro-21 to Gln-28, Pro-56 to Leu-64, Glu-79 to Pro-95, Met-125 to Gly-138.
832326	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1229 as residues: Ser-30 to Trp-45, Gln-64 to Cys-72, Pro-74 to Pro-80, Ala-92 to Arg-98, Trp-104 to Ser-112, Ser-129 to Asp-135, Pro-145 to Gln-152, Arg-168 to Gly-173, Gln-176 to Pro-183.
832370	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1232 as residues: Ala-5 to Ala-11, Pro-23 to Pro-36, Glu-72 to Gly-82, Pro-85 to Pro-91, Asp-

	98 to Glu-119, Pro-121 to Glu-127.
832381	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1233 as residues: Arg-1 to Glu-6, Arg-52 to Ala-58, Phe-72 to Leu-79, Gly-88 to Glu-93, Tyr-124 to Arg-134.
832454	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1235 as residues: Ala-23 to Asp-41.
832465	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1236 as residues: Ala-1 to Gly-7, Ala-32 to Val-45, Ile-65 to Ser-75, Ser-93 to Ser-108.
832475	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1237 as residues: Arg-1 to Val-10, Thr-65 to Ser-71, Arg-83 to Tyr-96, Trp-104 to Trp-111.
832495	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1238 as residues: Arg-9 to Arg-14.
832498	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1239 as residues: Pro-26 to Asp-31, Thr-113 to Gly-125, Asn-158 to Glu-163, Asn-288 to Val-293.
832501	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1240 as residues: Ser-8 to Glu-13.
832505	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1241 as residues: Ala-27 to Arg-46, Pro-54 to Arg-76, Arg-134 to Lys-140, Asn-148 to Ser-154, Lys-166 to Thr-172, Pro-175 to Gln-182, Asp-185 to Asp-192.
832554	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1243 as residues: Arg-26 to Val-31, Asn-122 to Thr-128.
832569	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1244 as residues: Gln-6 to Met-16.
832578	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1245 as residues: Arg-15 to Leu-27, Ser-62 to Gly-72, Pro-107 to His-112, Pro-122 to Gln-142, Glu-147 to Arg-158, Lys-177 to Lys-191, Leu-195 to Val-202, Leu-206 to Pro-218, Glu-228 to Gln-233, Asp-239 to Asp-244, Glu-258 to Gln-278.
832615	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1246 as residues: Gln-41 to Ala-48.
832632	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1248 as residues: Asn-60 to Val-70, Glu-93 to Trp-107, Arg-116 to Gln-125, Leu-133 to Lys-141, Lys-162 to Glu-167.
832633	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1249 as residues: Gly-8 to Trp-13, Pro-36 to Gly-41, Pro-91 to Ala-96.
834859	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1252 as residues: Tyr-16 to Leu-22, Asp-24 to Asp-34, Gly-43 to Ala-48, Gly-57 to Thr-68, Gly-118 to Ser-127, Ile-129 to Tyr-134, Pro-139 to Asp-162.
834861	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1253 as residues: Glu-14 to Glu-50, Glu-67 to Asp-74, Leu-89 to Asn-95.
834890	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1254 as residues: Arg-8 to Lys-13, Gly-35 to Lys-42, Ala-48 to Lys-54, Ala-105 to Leu-110, Gly-150 to Val-157, Phe-164 to Asn-173.
835079	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1255 as residues: Ser-53 to Pro-60.
835554	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1256 as residues: Ile-31 to Ile-38, Asp-116 to Arg-121, Phe-246 to Leu-251, Lys-280 to Tyr-291, Met-363 to Arg-373, Gly-381 to Trp-386.
835723	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1258 as residues: Glu-20 to Thr-26, Trp-47 to Ser-57, Pro-98 to Asn-105, Pro-124 to Phe-129, Ala-173 to Val-183, Lys-190 to Ser-196, Asn-277 to Asn-284, Glu-297 to Phe-306, Thr-322 to Lys-327, Gln-372 to Val-383, Pro-387 to Gly-395, Ser-406 to Thr-415, Arg-432 to Thr-442.
835791	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1259 as residues: Ala-4 to Gly-10.
835817	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1260 as



	residues: Glu-37 to Leu-43.
835840	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1261 as residues: Gln-1 to Asn-6, Pro-18 to Ile-31.
836048	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1262 as residues: Lys-1 to Lys-11, Tyr-27 to Glu-35, Glu-61 to Glv-68.
836898	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1263 as residues: Gln-94 to Lys-102, Gly-140 to Thr-154, Arg-173 to Asp-196, Thr-201 to Asp-206, Glu-241 to Gly-248.
836927	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1264 as residues: His-1 to Arg-12.
837344	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1265 as residues: Pro-15 to Ile-24.
837789	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1266 as residues: Ser-1 to Trp-7, Asp-47 to Ile-52, Pro-70 to Ser-80, Cys-89 to Thr-98, Ala-131 to Ser-142, Phe-169 to Cys-176, Gly-183 to Ser-193, Phe-202 to Pro-209, Arg-243 to Ala-249, Ser-256 to Lys-265, Arg-277 to Asp-284.
838754	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1268 as residues: Phe-27 to Ser-37, Tyr-91 to Arg-96, Pro-156 to Gln-164, Cys-207 to Val-216, Met-242 to Tyr-251.
839561	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1271 as residues: Arg-2 to Gly-7, Arg-16 to Gln-22, Phe-41 to Gly-49, Ala-60 to Asn-74, Leu-125 to Gln-131, Asp-170 to Pro-175, Ala-209 to Arg-218, Glu-222 to Glu-258, Ala-265 to Ser-300.
839816	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1272 as residues: His-32 to Arg-37, Ser-42 to Ser-48, Glu-77 to Glu-88.
840068	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1273 as residues: Ala-1 to Gln-14.
840279	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1274 as residues: Ala-1 to Asp-15.
840538	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1276 as residues: Ala-8 to Pro-13, Pro-18 to Gln-26, Lys-107 to Pro-114, Ala-149 to Arg-157, Ile-294 to Leu-299, Ser-356 to Pro-363, Pro-384 to Phe-392, Ala-474 to Gly-481, Ala-489 to Tyr-494, Pro-512 to Lys-517, Arg-623 to Thr-630, Lys-673 to Ser-678, Thr-703 to His-709, Arg-714 to Arg-720, Gly-755 to Glu-766.
840549	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1278 as residues: Ala-5 to Lys-15, Pro-28 to Gln-34, Tyr-105 to His-111, Gln-150 to Cys-157.
840557	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1280 as residues: Gly-34 to Leu-40, Thr-125 to Gly-134, Ala-148 to Arg-156, Lys-196 to Lys-215.
840561	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1281 as residues: Ser-21 to Phe-30.
840562	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1282 as residues: Gln-33 to Arg-41, Tyr-66 to Glu-71, Thr-112 to Gly-118, Thr-141 to Gly-148, Thr-160 to Cys-168, Arg-171 to Gly-177, Thr-180 to Pro-191, Glu-217 to Asp-225, Asp-236 to Lys-243.
840564	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1283 as residues: Val-13 to Pro-19, Gln-34 to Gly-39.
840600	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1285 as residues: Leu-26 to Ile-39.
840620	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1288 as residues: Ser-17 to Ser-26, His-32 to Gly-42, Thr-78 to Gln-83, Asp-130 to Leu-136, Arg-158 to Pro-164.
840626	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1290 as residues: Phe-7 to Tyr-13, Pro-19 to Ala-35, Asp-87 to Leu-96, Lys-98 to Glu-105, Glu-120 to Leu-133.
840638	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1291 as

	residues: Glv-8 to Leu-13, Glv-21 to Ser-31, Arg-45 to Arg-54.
840649	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1292 as residues: Asn-30 to Thr-37, Asp-44 to Lys-52, Ser-71 to Asp-80, Glu-127 to Glu-133, Arg-162 to Ala-173, Glu-191 to Leu-199.
840651	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1293 as residues: Gly-14 to Glu-38, Asn-90 to Lys-100, Lys-150 to Val-158, Ser-166 to Gly-175.
840681	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1295 as residues: Thr-25 to Gly-31, Pro-86 to Trp-97, Ser-132 to Phe-138.
840682	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1296 as residues: Arg-12 to Lys-19, Asn-30 to Gly-36, Asp-50 to Gly-57, Glu-64 to Thr-69, Thr-79 to Lys-91, Gln-110 to Thr-115, Arg-223 to Gln-229, Asp-255 to Asp-260, Arg-278 to Gly-287, Glu-294 to Gln-300, Glu-433 to Glu-451, Leu-474 to Glu-479, Asp-490 to Leu-498, Gln-519 to Asp-527, Tyr-566 to Asp-575.
840684	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1297 as residues: Pro-1 to Ala-9, Val-56 to Val-63, Gly-86 to Glu-91.
840697	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1298 as residues: Pro-9 to Arg-15, Pro-36 to Ser-42, Ser-65 to Phe-72, Gly-99 to Ser-105, Ala-122 to Phe-129.
840698	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1299 as residues: Thr-75 to Pro-84, His-94 to Met-99, Asp-149 to Ile-168, Asn-370 to Asn-375, Ser-384 to Lys-392, His-427 to Tyr-438.
840708	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1300 as residues: Ala-27 to Ser-36.
840714	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1301 as residues: Gly-1 to Gly-20, Arg-54 to His-59, Asn-89 to Leu-95, Ser-119 to Lys-125, Trp-127 to Cys-133, Gln-175 to Gln-185, Asp-213 to Lys-222, Pro-267 to Gln-275, Asp-306 to Asp-313, Thr-321 to Cys-331.
840716	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1302 as residues: Asn-40 to Thr-45, His-210 to Pro-215, Glu-369 to Thr-375, Lys-383 to Leu-397, Pro-438 to Ile-447, Pro-510 to Tyr-520, Arg-528 to Arg-533, Thr-549 to Thr-555.
840721	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1303 as residues: Arg-1 to Arg-7, Pro-29 to Lys-56, Asp-103 to Arg-108, Tyr-122 to Ser-127, Gly-219 to Glu-227, Asp-250 to Glu-255, Glu-294 to Pro-301, Ala-321 to Tyr-327, Arg-367 to Pro-373, Glu-396 to Asn-405, Gly-411 to Arg-418, Asn-433 to Lys-441.
840735	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1304 as residues: Glu-1 to Gly-11, Thr-20 to Asp-40, Gly-51 to Glu-61, Ala-64 to Leu-78, Leu-82 to Arg-94.
840738	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1305 as residues: Gln-26 to Asn-34.
840745	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1306 as residues: Gln-7 to Gly-12, Leu-60 to Pro-65, Arg-85 to Lys-99, Ser-132 to Pro-145, Pro-150 to Asp-155, Pro-183 to Asn-193, Arg-200 to Tyr-206.
840747	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1307 as residues: Gln-1 to Asp-15, Ile-35 to Glu-41, Leu-66 to Asn-71, Leu-73 to Pro-79, Gln-87 to Lys-94, Val-117 to Arg-123, Pro-144 to Tyr-150.
840756	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1308 as residues: Arg-8 to Gln-19, Arg-25 to Lys-38.
840776	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1309 as residues: Val-2 to Pro-10, Ser-28 to Ala-33, Pro-39 to Tyr-44, Thr-46 to Trp-55, Ser-64 to Ser-72, Ala-103 to Pro-109, Pro-111 to Gln-118.
840784	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1310 as residues: Pro-9 to Gly-20, Asn-32 to Leu-42, Asn-60 to Lys-70, Pro-76 to Gln-81, Glu-86 to Val-93, Arg-106 to Arg-111, Lys-176 to Asn-183.
840788	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1311 as residues: Ser-1 to Gln-8, Val-40 to Ser-49, Arg-105 to Lys-110.

840794	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1312 as residues: Arg-1 to Gln-14, Arg-43 to Glu-54.
840797	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1313 as residues: Gly-1 to Arg-9, Asn-31 to Asp-37, Arg-44 to Asn-53, Gly-62 to Lys-77, Thr-123 to Ile-137, Gly-389 to Thr-394, Lys-486 to Asn-493, Glu-512 to Phe-520, Met-555 to Lys-560, Leu-618 to Ser-623, Ile-698 to Glu-706, Gly-723 to Leu-730, Ala-773 to Gln-790.
840818	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1315 as residues: Pro-1 to Ile-12, Asp-30 to Tyr-35, Leu-38 to Pro-45, Lys-54 to Thr-60, Thr-75 to Leu-80, Asp-92 to Tyr-100, Ile-133 to Thr-138, Thr-194 to Glu-199, Asp-233 to Leu-239, Met-243 to Ala-251, Asp-254 to Glu-261.
840822	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1316 as residues: Val-100 to Tyr-106, Ala-127 to His-135, Gln-153 to Lys-158, Gly-214 to Glu-219, Gln-236 to His-244, Lys-253 to Tyr-258.
840846	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1318 as residues: Ala-20 to Thr-27, Glu-47 to Tyr-57, Tyr-87 to Lys-95, Pro-121 to Ala-127, Pro-208 to Ala-224.
840848	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1319 as residues: Arg-77 to Asn-82, Glu-119 to Arg-124, Gln-156 to Thr-162, Lys-209 to Lys-215.
840860	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1320 as residues: Ile-27 to Asp-41, Glu-43 to Ala-58, Glu-149 to Glu-154, Lys-158 to Ile-165, Glu-167 to Gly-189, Glu-242 to Phe-247, Arg-259 to Phe-268, Ile-283 to Val-291, Thr-295 to Thr-307, Glu-328 to Asp-338, Asp-372 to Gly-387.
840871	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1322 as residues: Gly-31 to Tyr-38, Leu-40 to Leu-45, Pro-203 to Trp-208.
840874	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1323 as residues: Ala-23 to Gly-28.
840878	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1324 as residues: Thr-40 to Glu-46, Pro-69 to Arg-76, Glu-108 to Asp-150.
840880	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1325 as residues: Ser-5 to Lys-14, Phe-32 to Gln-37.
840884	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1326 as residues: Leu-4 to Ser-10.
840926	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1328 as residues: Met-6 to Thr-15, Ser-17 to Phe-37, Ser-148 to Lys-154, Lys-260 to Phe-276, Glu-285 to Ile-292, Lys-410 to Asp-424.
840932	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1329 as residues: Tyr-75 to Pro-83, Ile-181 to Gln-191, Glu-267 to Leu-275, Met-301 to Ala-307, Phe-322 to Gln-328, Met-371 to Gly-381, Gln-458 to Leu-463, Glu-474 to Lys-480, Lys-551 to Ser-558.
840940	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1330 as residues: Ser-26 to Thr-34, Thr-80 to Lys-88.
840947	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1331 as residues: Ile-1 to Arg-11, Pro-19 to Gln-46, Ala-55 to Pro-62, Cys-65 to Cys-82, Lys-93 to Pro-108.
840964	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1333 as residues: Ser-41 to Cys-46.
840979	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1334 as residues: Tyr-10 to His-27, Tyr-31 to Arg-41, Thr-44 to Leu-61, Cys-68 to Phe-73, Lys-98 to Glu-106, Gln-132 to Val-142, Glu-184 to Leu-191.
840984	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1335 as residues: Arg-38 to Gln-48, Met-137 to Asn-144, Gln-167 to Gln-172, Lys-182 to Gln-189, Gln-196 to Glu-206, Ile-210 to Glu-223, Gln-225 to Arg-246, Glu-250 to Thr-269, Gln-296 to Ile-318, Arg-323 to Glu-328, Tyr-337 to Lys-343, Glu-349 to Thr-357, Ser-393 to Glu-403, Arg-405 to Ile-427, Arg-431 to Glu-442, Leu-446 to Lys-473, Glu-475

	to Leu-486, Ile-488 to Asp-503, Ser-505 to Arg-623, Ala-625 to Asn-631, His-634 to Trp-792, Gly-799 to Gly-870, Arg-872 to Glu-929, Ser-931 to Pro-954, Ala-957 to Ala-977, Glu-982 to Trp-1000.
840986	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1336 as residues: Asp-41 to Tyr-51.
840988	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1337 as residues: Pro-17 to Leu-31, Ser-95 to Val-100, Lys-123 to Glv-129.
840990	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1338 as residues: Met-9 to Glu-16, Glu-41 to Trp-47, Arg-55 to Glu-62, Asp-135 to Ile-146, Gly-154 to Gly-160, Met-207 to Phe-214, Ser-245 to Lys-252, Gln-282 to Gln-288.
841009	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1340 as residues: Glu-12 to Thr-27, Met-45 to Asn-52, Tyr-79 to Thr-87, Asp-97 to Gly-102, Met-112 to Asp-120, Pro-141 to Tyr-155.
841012	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1341 as residues: Lys-36 to Ile-44, Arg-49 to Lys-69.
841016	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1342 as residues: Cys-75 to His-82, Asp-126 to Tyr-135, Pro-144 to Tyr-155, Gly-179 to Trp-198, Tyr-201 to Met-208, Pro-226 to Lys-234, Gln-249 to Asp-267.
841017	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1343 as residues: Gln-1 to Trp-19.
841021	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1344 as residues: Glu-58 to Gly-63, Leu-75 to Leu-82.
841032	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1345 as residues: Pro-1 to Gly-13, Pro-30 to Ser-57, Gln-61 to Thr-77, Arg-82 to Thr-88, Pro-100 to Lys-105, Gly-119 to Gly-126.
841051	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1346 as residues: Asn-1 to Lys-6, Thr-16 to Glu-21, Asn-45 to Ser-58, Asp-68 to Ser-75.
841064	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1347 as residues: Asp-53 to Pro-58, Glu-78 to Lys-85, Pro-95 to Arg-102, Ser-142 to Arg-148, Lys-209 to Arg-214, Lys-241 to Gly-246, Ser-287 to Leu-292, Lys-307 to Val-313, Arg-389 to Gln-394.
841069	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1348 as residues: Thr-1 to Trp-14, Lys-27 to Leu-44, Glu-59 to Arg-73, Lys-87 to Phe-95, Pro-160 to Asn-166, Leu-212 to Ile-220, Arg-236 to Asp-243.
841072	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1349 as residues: Pro-7 to Arg-12, Phe-71 to Gln-76, Arg-82 to Asp-98, Ala-108 to Glu-128.
841078	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1350 as residues: Arg-32 to Ala-39.
841080	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1351 as residues: Glu-1 to Gly-7, Glu-25 to Gly-33, Ala-54 to Phe-60, Gly-64 to Gln-108, Glu-116 to Ser-122, Pro-130 to Asn-138, Gln-141 to Lys-153, Arg-164 to Ser-172, Leu-186 to Met-194, Pro-197 to Tyr-205, Asp-218 to Lys-229, Thr-236 to Ser-246, Ala-259 to Trp-266, Pro-281 to Pro-287, Cys-291 to Gln-298.
841092	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1353 as residues: Glu-45 to Lys-50.
841095	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1354 as residues: Lys-1 to Ser-19, Gly-33 to Gly-63, Gly-77 to Pro-89, Ser-164 to Ser-180, Ser-233 to Lys-238, Lys-267 to Leu-286.
841096	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1355 as residues: Gly-5 to Leu-12, Tyr-18 to Asp-25, Ile-88 to Ala-125, Ser-129 to Tyr-141, Gln-191 to Gln-196, Thr-290 to Asn-296, Thr-301 to Thr-309, Leu-360 to Ala-365, Leu-367 to Gly-378, Pro-398 to Gly-418, Pro-443 to Glv-454.
841102	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1356 as residues: Ser-61 to Leu-71.
841108	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1358 as residues: Ala-8 to Leu-20, Lys-27 to Arg-33, Arg-40 to Ala-50, Asp-77 to Glu-84.

	Asn-99 to Gly-109.
841119	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1360 as residues: Lys-6 to Ala-14, Ile-68 to Asn-73, Val-84 to Leu-90, Glu-110 to Val-116, Leu-182 to Gly-190, Tyr-264 to Phe-270, Ile-300 to Lys-306, Pro-354 to Glu-367.
841124	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1361 as residues: Ser-21 to Thr-26.
841143	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1363 as residues: Thr-1 to Lys-9, Pro-20 to Gly-27, Gly-29 to Gly-52, Arg-54 to Gly-61, Gly-69 to Gly-75, Ser-79 to Gly-96, Val-130 to Arg-135, His-207 to Asp-212, Val-296 to Leu-310, Arg-327 to Asn-334.
841148	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1364 as residues: Pro-1 to Met-43, Pro-55 to Ala-66, Pro-118 to Glu-128, Arg-181 to Lys-192, Tyr-197 to Thr-207, Trp-278 to Cys-284, Arg-334 to Asp-349.
841155	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1367 as residues: Gly-9 to Arg-24, Glu-69 to Met-74, Leu-86 to Leu-92, Asp-95 to Arg-115.
841163	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1370 as residues: Gly-29 to Gly-35, Ala-37 to Ala-48, Arg-97 to Thr-102, Arg-114 to Leu-119, Lys-144 to Lys-155.
841169	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1371 as residues: Ala-31 to Thr-69, Pro-90 to Pro-95, Pro-117 to Trp-126, Pro-128 to Arg-136.
841172	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1372 as residues: Gly-17 to Arg-35, His-76 to Pro-90, Pro-92 to Cys-103.
841174	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1373 as residues: Arg-1 to Arg-8, Arg-14 to Phe-19.
841179	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1374 as residues: Leu-4 to Met-10, Leu-17 to Tyr-36, Arg-38 to Asp-63, Tyr-82 to Glu-90, Pro-97 to Gly-134, Arg-137 to Pro-148, Thr-160 to Lys-171, Tyr-183 to Asn-228, Gln-249 to Asn-258, Arg-263 to Glu-271, Arg-277 to Gln-296, Phe-298 to Asp-320, Glu-322 to Lys-329, Thr-337 to Thr-343, Glu-356 to Arg-363, Gly-371 to Asp-384.
841183	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1375 as residues: His-1 to Ser-27, Arg-60 to Arg-73, Arg-96 to Asp-124, Asp-131 to Gly-143, Lys-145 to Glu-150.
841186	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1376 as residues: Leu-7 to Val-18, Ser-27 to Pro-57, Arg-124 to Thr-135, Pro-212 to Ser-230, Gly-282 to Lys-287, Lys-441 to Lys-448.
841204	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1377 as residues: Lys-29 to Arg-35, Glu-81 to Arg-87, Ala-251 to Glu-261, Thr-266 to Gly-271, Thr-289 to Glu-295, Gly-328 to Tyr-334, Phe-432 to Lys-438, Asn-440 to Trp-458.
841206	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1378 as residues: Val-17 to Pro-25, Thr-55 to Asp-70, Lys-75 to Leu-81.
841207	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1379 as residues: Pro-9 to Glu-15, Arg-22 to Trp-32, Ser-54 to Glu-62, Asn-92 to Gly-103.
841211	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1380 as residues: Arg-7 to Gly-12, Met-42 to Ser-58, Gln-65 to Asn-73, Glu-91 to Ala-99, Pro-103 to Tyr-109, Arg-174 to Ala-179, His-189 to Gln-196, Asn-208 to Pro-219.
841225	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1381 as residues: Ala-32 to Ala-40, Glu-93 to Phe-103, Lys-173 to Thr-189.
841237	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1383 as residues: Arg-2 to Gln-12, Lys-76 to Ala-86, Tyr-155 to Lys-163, Glu-228 to Leu-234, Lys-263 to Lys-273, Ile-286 to Lys-296.
841241	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1384 as residues: Asp-41 to Ile-52, Thr-59 to Lys-64, Glu-75 to Asn-89, Thr-99 to Thr-105.
841259	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1385 as residues: His-1 to Cys-22, Pro-24 to Pro-30, Tyr-84 to Ser-90, Ser-108 to Glu-118, Val-126 to Arg-143, Asp-175 to Gln-181, Ser-217 to Gly-224, Cys-262 to Cys-270.

	Tyr-296 to Glu-302, Thr-317 to Thr-324, Gln-341 to Gln-348, Trp-394 to Pro-399.
841260	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1386 as residues: Ala-25 to Glu-32, Ala-48 to Phe-53, Ser-69 to Ser-76, Asp-80 to Glu-86, Ser-125 to Ser-132, Ser-168 to Glu-179, Asn-201 to Ala-206, Lys-216 to Ile-246, Met-259 to Asn-272, Tyr-277 to Gln-287.
841264	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1387 as residues: Met-34 to Gly-50, Asp-69 to Trp-90, Asp-99 to Lys-107, Val-164 to Thr-170.
841311	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1389 as residues: Arg-4 to Val-15.
841313	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1390 as residues: His-6 to Gly-16, Gly-60 to Pro-95, Pro-125 to Gly-131, Gly-138 to Ala-147, Gln-173 to Glu-178.
841322	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1392 as residues: Lys-6 to Arg-23, Ser-74 to Arg-86, Lys-116 to Lys-122, Ser-127 to His-133, Ser-269 to Pro-275, Glu-344 to Phe-350, Gly-356 to His-362.
841331	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1393 as residues: Ser-45 to Lys-67, Asp-155 to Asp-172, Gln-193 to Ile-199, Gln-271 to Glu-285.
841332	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1394 as residues: Glu-8 to Ser-13, Lys-20 to Glu-27, Arg-81 to Ser-94, Thr-147 to Ile-154, Asn-200 to Glu-212, Asn-235 to Gly-244, Leu-433 to Thr-439, Pro-444 to Asn-455, Ser-470 to Asp-476, Ser-492 to Met-499, Glu-535 to Pro-547, Glu-703 to Thr-709, Glu-719 to Thr-726, Asn-802 to Leu-807, Asn-820 to Arg-825, Lys-830 to Tyr-836, Thr-838 to Thr-850, Ser-882 to Ser-894, Lys-944 to Gly-952, Gly-969 to Val-977, Glu-984 to Asn-990, Arg-996 to Lys-1001, Pro-1032 to Leu-1039, Thr-1050 to Gly-1058, Val-1103 to Arg-1108, Pro-1160 to His-1169, Tyr-1180 to Ser-1187, Glu-1211 to Ser-1217, Pro-1277 to Leu-1282.
841338	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1395 as residues: Ser-13 to Ser-18, Phe-48 to Ser-54.
841345	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1396 as residues: Trp-83 to Thr-89, Ser-135 to Asn-140, Ser-185 to Cys-190, Tyr-209 to Glu-220, Val-224 to Glu-232, Leu-258 to Asn-263, Ser-306 to Asn-312, Thr-319 to Glu-327, Thr-365 to Ile-373, Gly-417 to Cys-429, Lys-439 to Val-445, Lys-464 to Leu-469, Leu-477 to Asn-485, Arg-546 to Val-554, Glu-598 to Gly-607, Pro-634 to Ser-639, Asn-730 to Ala-746, Lys-812 to Gln-817, Glu-819 to Lys-835, Leu-867 to Asn-875, Leu-902 to Arg-910.
841349	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1397 as residues: Asp-13 to Arg-18, Pro-36 to Arg-43, Gly-66 to Ser-74, Gly-87 to Lys-92, Asp-110 to Glu-115.
841417	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1399 as residues: Leu-102 to Ile-111, Pro-131 to Ile-337, Thr-339 to Asp-376.
841632	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1401 as residues: Arg-13 to Gly-40, Arg-46 to Glu-52, Gln-55 to Lys-69.
841771	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1403 as residues: Pro-22 to Gly-30, Asp-45 to Gln-56, Ser-67 to Ser-73.
841827	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1404 as residues: Thr-1 to Ser-20.
841835	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1405 as residues: Tyr-5 to Lys-13, Cys-52 to Arg-61, Cys-85 to Ala-91, Gly-122 to Asn-127.
842259	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1406 as residues: Pro-16 to Gly-23, Glu-37 to Pro-45, Gly-52 to Ser-57.
842463	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1407 as residues: Cys-74 to Tyr-79.
842595	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1408 as residues: Pro-93 to Ala-105, Ser-133 to Ser-142, Arg-150 to Glu-155, Lys-220 to Trp-

	226, Glu-257 to Lys-271, Gln-280 to Leu-289.
842722	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1409 as residues: Glu-9 to Arg-20, Ser-48 to Lys-56, Ile-69 to Glu-81, Pro-83 to Lys-89, Lys-94 to Ile-99, Pro-104 to Gly-110, Glu-116 to Asp-133, Ile-140 to Ser-154, Gln-206 to His-217, Pro-219 to Leu-231, Arg-237 to Lys-243, Gln-247 to Pro-256, Leu-271 to Thr-283, Lys-289 to Lys-294, Ser-338 to Lys-355, Gly-375 to Thr-381, Ser-428 to Pro-454, Gly-460 to Gln-467, Lys-480 to Lys-488.
842818	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1411 as residues: Ala-25 to Ala-30, Lys-32 to Ala-51, Gln-61 to Ala-68, Glu-83 to Lys-91, Phe-99 to Glu-105, Glu-123 to Gly-129.
843251	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1412 as residues: Pro-30 to Ser-40, Lys-47 to Thr-52, Val-59 to Pro-64, Lys-129 to Arg-134, Leu-169 to Asp-177.
843422	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1413 as residues: Thr-9 to Lys-20, Lys-25 to Cys-31, Pro-33 to Tyr-42, Asn-76 to Lys-84, Leu-102 to Trp-112.
843784	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1414 as residues: Leu-16 to Thr-24, Glu-41 to Gln-47, Lys-64 to Cys-72, Thr-87 to Ser-100, Pro-130 to Asn-143, Thr-163 to Asp-170.
844017	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1415 as residues: Leu-11 to Ile-17, Leu-30 to Met-45.
844138	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1416 as residues: Lys-19 to Thr-28, Arg-47 to Gln-52, Leu-73 to Leu-81, Asp-122 to Phe-131, Ala-135 to Ser-148, Pro-155 to Asp-163, Ser-184 to His-191, Leu-219 to Asn-225, Asp-238 to Thr-248, Pro-253 to Cys-259, Cys-356 to His-368, Ser-426 to Gly-435, Pro-467 to Cys-478, Glu-504 to Cys-509, His-553 to Gly-568, Ala-581 to Cys-586, Ala-595 to Cys-600, Arg-602 to Trp-608.
844194	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1418 as residues: Pro-23 to Arg-31, Gln-79 to Gln-85, Cys-93 to Cys-107, Pro-216 to Leu-222.
844394	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1419 as residues: Arg-1 to Phe-11.
844450	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1420 as residues: Ser-37 to Trp-43, Pro-47 to Thr-55, Arg-60 to Lys-69, Tyr-125 to His-131, Pro-187 to Lys-195, Gly-346 to Lys-351.
844535	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1422 as residues: Asp-8 to Ala-18, Ser-47 to Ala-52, Thr-62 to Arg-69, Pro-119 to Asp-126, Trp-164 to Thr-170, Ala-206 to Ala-213, Pro-230 to Gly-235, Lys-304 to Lys-314, Lys-341 to Val-347, Tyr-387 to Thr-398.
844644	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1423 as residues: Ala-9 to Asp-16, Asn-78 to Tyr-86.
844653	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1424 as residues: Arg-1 to Gly-8, Ala-30 to Gln-36.
844796	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1426 as residues: His-12 to His-22.
844812	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1427 as residues: Gly-281 to Arg-290, Ala-349 to Ser-355, Glu-378 to Asp-388.
844894	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1428 as residues: Pro-2 to Phe-8, Ser-13 to Ala-34, Pro-37 to Phe-43, Lys-63 to Gly-73, Cys-88 to Asp-93, Gly-98 to Trp-103, Cys-273 to Ile-287, Ile-290 to Ser-296.
845361	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1429 as residues: Met-10 to Ile-21, Glu-108 to Lys-122, Lys-272 to Gly-280, Gly-298 to Lys-304, Trp-364 to Lys-369.
845620	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1430 as residues: Thr-62 to Ala-67, Leu-96 to Glu-101, Cys-184 to Trp-190.
845639	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1431 as residues: Arg-41 to Arg-48, Met-72 to Val-79, Gln-81 to Trp-89, Ala-96 to Asp-101,

	Arg-110 to Gly-118, Asn-126 to Arg-135, Ala-144 to Asp-149, Leu-199 to Lys-213, Gln-245 to Glu-256, Arg-261 to Thr-267.
845660	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1432 as residues: Gly-5 to Leu-17, Arg-19 to Arg-29, Pro-36 to Arg-50, Arg-60 to Pro-67, Gln-133 to Leu-150, Gln-168 to Phe-187, Pro-189 to Gln-194, Asp-240 to Gly-251, Thr-308 to Cys-317, Val-325 to Glu-331, Leu-354 to Pro-369, Lys-381 to Cys-388, Arg-410 to Phe-417.
845720	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1433 as residues: Thr-1 to Glu-11, Arg-21 to Pro-27, Pro-44 to His-49, Glu-56 to Leu-69, Ala-74 to Gly-80, Phe-82 to Pro-87.
845897	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1435 as residues: Gly-1 to Ser-9, Gly-31 to Ser-38, Arg-52 to Val-68, Leu-71 to Glu-84.
845922	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1436 as residues: Asn-1 to Pro-6, Pro-29 to Gln-36, Glu-95 to Arg-100, Pro-150 to Met-157, Ser-272 to Tyr-278, Gly-289 to Arg-294, Lys-397 to Ser-403.
846040	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1438 as residues: Cys-6 to Ser-16, Glu-52 to Tyr-58, Asn-144 to Lys-153.
846073	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1439 as residues: Arg-6 to Thr-16, Ile-43 to Gln-48, Leu-131 to Gly-139, Gly-147 to Asp-155, Asp-191 to Asp-198, Gly-204 to Thr-214.
846257	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1440 as residues: Lys-24 to Phe-44, Arg-58 to Gly-64, Ser-69 to Val-75, Lys-83 to Leu-90, Lys-93 to Glu-106.
HTXPN06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1441 as residues: Gly-1 to His-8.
HWAFU16R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1443 as residues: Ile-29 to Lys-34.
HOEMT44R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1445 as residues: Asp-73 to Lys-79.
HE2OW04R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1446 as residues: Cys-1 to Asn-6, Met-41 to Thr-51, Lys-77 to Thr-82.
HFCFG25R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1447 as residues: Lys-29 to Ile-37, Arg-42 to Lys-47.
HAPQP94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1448 as residues: Pro-18 to Arg-23, Ala-43 to Ser-48.
H2CBI37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1449 as residues: Gly-5 to Lys-19, Phe-26 to Trp-31.
HCRNC25R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1451 as residues: Leu-2 to Asn-8.
H2LAY26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1453 as residues: Pro-20 to His-36.
HAPQA06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1454 as residues: Tyr-15 to Ala-22, Ser-68 to Gly-74.
HBGOK18R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1456 as residues: Gly-1 to Tyr-6, Asp-40 to Thr-47, Lys-91 to Glu-97.
HTWKF26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1458 as residues: Gly-31 to Gly-39.
HTAHR89R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1459 as residues: Asp-73 to Gly-78.
HOELC27R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1461 as residues: Asn-19 to Gln-25, Arg-33 to Ala-42, Pro-92 to Lys-99.
HWLVW62R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1463 as residues: Lys-6 to Phe-13, His-25 to Ser-30, Glu-35 to Ala-41, Pro-57 to Gly-62.
HFKHD94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1465 as residues: Leu-1 to Gly-6, Pro-29 to Gly-42, Lys-52 to Gly-62.
HOFOA89R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1467 as



	residues: Ala-20 to Lys-29, Arg-48 to Ile-56.
HCR0L58R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1470 as residues: Lys-1 to Ser-16.
HCHMV24R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1473 as residues: Gly-4 to Lys-10, Gln-36 to Glu-41.
HCHPT49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1474 as residues: Gly-4 to Lys-10, Gln-36 to Glu-41, Arg-61 to Arg-70.
HCHPF59R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1477 as residues: Arg-10 to Lys-22.
HS2IA81R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1478 as residues: Gly-4 to Lys-10, Gln-36 to Glu-41, Arg-61 to Arg-76.
HCRNC17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1479 as residues: Gly-4 to Lys-10, Gln-36 to Glu-41, Arg-61 to Arg-76, Lys-107 to Pro-112.
HISDJ39R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1480 as residues: Gly-4 to Lys-10, Gln-36 to Glu-41, Arg-61 to Arg-76.
HASCG71R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1482 as residues: Lys-6 to Ile-13.
HOEMO43R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1483 as residues: Lys-31 to Gln-43.
HSYDG18R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1486 as residues: Pro-1 to Glu-7, Asp-42 to Gly-47, Leu-61 to Glu-69, Lys-97 to Ile-107, Asp-115 to Gly-120.
HACAC47R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1490 as residues: Ala-18 to Asp-26.
HLQFY41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1491 as residues: Val-11 to Asp-16, Glu-46 to Arg-51, Pro-55 to Lys-61, Lys-82 to Val-87.
HOFMO83R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1492 as residues: Thr-31 to Asp-39, Thr-52 to Gly-60.
HFTDR22R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1493 as residues: Glu-1 to Trp-13.
HOEKC39R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1495 as residues: Tyr-25 to Phe-32.
HOSNR06R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1498 as residues: Thr-1 to Tyr-7.
HCQDL20R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1499 as residues: Ser-12 to His-21.
HFKHD49R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1503 as residues: Ala-42 to Glu-68.
H6EAQ15R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1506 as residues: Ala-1 to Leu-9.
HCFLM34R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1507 as residues: Lys-7 to Thr-13, Asp-24 to Thr-30, Gly-39 to Glu-52, Leu-70 to Ile-78.
HKIXL19R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1510 as residues: Thr-2 to Asn-12, Gly-14 to Arg-24.
HAJRB09R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1512 as residues: Pro-1 to Glu-8, Ala-10 to Gly-26.
HAPNI86R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1513 as residues: Glu-53 to Ser-59, His-121 to Gln-130.
HAPRJ22R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1515 as residues: Gly-49 to Glu-64, Phe-76 to Thr-81.
HADGE45R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1518 as residues: Arg-1 to Gln-26, Phe-59 to Lys-68.
HTXPN11R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1519 as residues: Asp-1 to Lys-8, Asp-35 to Glu-41.
HCDBN37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1520 as residues: Cys-1 to Leu-15.

HABGF46R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1527 as residues: Arg-11 to Arg-20, Asn-42 to Pro-57, Arg-64 to Ser-81.
HOELC15R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1528 as residues: His-8 to Gly-18, Gln-56 to Arg-61.
H2LAR26R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1529 as residues: Glu-11 to Asn-16, Lys-38 to Glu-43, Ala-62 to Asp-67, Asp-80 to Ser-101.
H2LAV85R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1530 as residues: Pro-14 to Thr-25, Asp-89 to Gln-102, Ile-121 to Thr-131.
HBSDC92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1531 as residues: Arg-1 to Leu-11.
HUTHN01R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1532 as residues: Pro-34 to Ser-42, Cys-82 to Lys-89.
H2LAW03R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1533 as residues: Arg-120 to Arg-127.
HOEMO60R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1534 as residues: Pro-6 to Arg-11, Phe-18 to Asn-23, Leu-36 to Thr-41.
HOELF72R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1537 as residues: Arg-1 to Pro-14, Gln-47 to Cys-52.
HAPNX59R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1538 as residues: Cys-19 to Ser-25, Asp-28 to Trp-34, Lys-71 to Trp-76, Glu-112 to Lys-120.
HBJJS17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1539 as residues: His-14 to Glu-26.
H2CBN02R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1542 as residues: Ala-1 to Pro-9, Arg-20 to Val-25.
H2CBV68R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1543 as residues: Pro-41 to Asp-46, Leu-56 to Lys-61, Ala-72 to Thr-83, Lys-100 to Asn-106, Leu-125 to Thr-133.
H6EDK07R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1544 as residues: Glu-32 to Glu-40, Val-45 to Thr-51, Pro-61 to Arg-67.
H2CBN54R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1547 as residues: Cys-36 to Tyr-44, Glu-55 to Asp-61, Arg-79 to Pro-84, Asp-89 to Pro-105, Cys-108 to Ala-118, Lys-126 to Gly-142.
HWHPX50R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1549 as residues: Pro-35 to Tyr-41.
HAPQD84R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1550 as residues: Lys-32 to Glu-39.
HAMGQ78R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1554 as residues: Arg-46 to Arg-60, Glu-69 to Gly-78.
HODEV64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1555 as residues: Glu-1 to Gly-27, Asn-34 to Phe-48, Gly-63 to Gly-68.
HOEMK78R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1558 as residues: Asp-27 to Gly-34, Ser-41 to Glu-49, Val-55 to Gln-62.
H2CBD13R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1559 as residues: Ile-17 to His-22, Ser-24 to Arg-29.
HCFMU61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1560 as residues: Ser-10 to Asp-20, Leu-22 to Pro-36, Ser-42 to Lys-57, Gln-102 to Glu-110.
HOSNE94R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1561 as residues: Arg-1 to Glu-6, Asp-74 to Ser-79, Asp-122 to Thr-127.
HHBEF47R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1563 as residues: Arg-25 to His-31, Ala-50 to Ala-55.
HOSNR67R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1566 as residues: Val-56 to Cys-61, Thr-108 to Gln-122, Gln-125 to Lys-131, Glu-140 to Leu-146.
H2LAV92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1567 as residues: Leu-3 to Ala-10, Pro-12 to Gly-21, Pro-32 to Pro-38, Ala-58 to Lys-64, Lys-67 to Val-75, Asp-92 to Leu-103.

HCLBZ27R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1570 as residues: Asp-12 to Glu-18, Ala-22 to Ile-28, Ala-48 to Gly-60.
H2LAV11R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1571 as residues: Thr-5 to Thr-14, Arg-20 to His-25, Arg-35 to Gly-40, Lys-58 to Arg-66, His-101 to Ser-107, Arg-111 to Lys-125.
HOEMJ56R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1573 as residues: Lys-27 to Tyr-48.
HDPLP40R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1576 as residues: Gly-1 to Cys-24, Cys-27 to Gly-43, Ala-46 to Trp-54, Ala-56 to Arg-68, Phe-83 to Arg-93.
HABAD57R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1578 as residues: Gly-3 to Gln-16, Pro-36 to Ala-41.
H2CBL68R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1581 as residues: Pro-19 to Val-24, Thr-31 to Gln-38, His-103 to Lys-114, Arg-129 to Leu-137, Pro-139 to Ser-146.
HNTNE17R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1582 as residues: Val-8 to Lys-15, Tyr-25 to Asn-35, Lys-48 to Lys-53, Leu-77 to Asn-87, Asp-103 to Glu-108.
HBJLR37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1583 as residues: Asn-1 to His-11, Pro-82 to Glu-89, Pro-91 to Asp-96, Arg-103 to Met-109.
HOSNG20R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1584 as residues: Thr-50 to Lys-55.
HBGNY11R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1586 as residues: Thr-10 to Trp-15, Leu-24 to Ala-30, Leu-32 to Glu-38, Asn-41 to Ala-59, Arg-81 to Asp-89, Lys-104 to Lys-111.
HOEKC80R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1587 as residues: Pro-49 to Phe-55, Gly-82 to Gly-88.
HFCE53R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1589 as residues: Thr-12 to Leu-18.
HWAFE36R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1592 as residues: Glu-2 to Ile-9, Glu-34 to Lys-42.
HTXPF20R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1594 as residues: Gly-4 to Thr-13.
HCRMD09R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1595 as residues: Thr-2 to Asn-10, Glu-22 to Gln-30, Ser-58 to Gln-80, Gln-88 to Phe-96, Thr-99 to Tyr-104, Lys-110 to Asp-115.
HAJRB47R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1596 as residues: Trp-18 to Ser-26, Asp-91 to Trp-99.
HAHCR61R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1603 as residues: Ser-17 to Cys-25.
HAPQK19R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1609 as residues: Arg-1 to Lys-10, Ser-15 to Tyr-22, Gly-25 to Leu-31.
HBGOK25R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1615 as residues: Thr-38 to Trp-45, Pro-63 to Gln-70, Pro-78 to Gln-85.
HBJKI05R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1619 as residues: Pro-43 to Trp-50.
HBLGD42R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1621 as residues: Pro-17 to Pro-27, Pro-32 to Tyr-38, Ala-44 to Pro-49.
HCHAK80R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1627 as residues: Gln-3 to His-13, Gly-48 to Gly-55.
HCHMW79R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1628 as residues: Ser-16 to His-21, Ala-29 to Thr-35.
HCHOB92R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1629 as residues: Lys-20 to Lys-28, Ser-53 to Leu-60.
HCLBO01R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1630 as residues: Leu-1 to Leu-18.

HCRPC63R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1633 as residues: Glu-1 to Arg-28.
HCUDC51R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1634 as residues: Pro-22 to Gly-32, Trp-67 to Lys-81.
HDPFI40R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1635 as residues: Tyr-1 to Phe-6, Pro-9 to Asn-22, Arg-30 to Ala-38, Pro-47 to Lys-69.
HDPRZ34R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1637 as residues: Gly-1 to Ala-8.
HFAUO64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1640 as residues: Asn-7 to Lys-29.
HJMAU64R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1645 as residues: Leu-58 to Tyr-69.
HKBAC48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1647 as residues: Ser-16 to His-46, Arg-49 to Thr-58.
HKBAD57R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1648 as residues: Thr-23 to Ser-30.
HODAY16R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1653 as residues: Pro-15 to Thr-20.
HOEMO27R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1655 as residues: Ala-7 to Ser-12.
HOEMO62R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1656 as residues: Ile-3 to Lys-11.
HOENU53R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1658 as residues: Lys-37 to Asn-44.
HOGAP33R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1659 as residues: Gln-29 to Asp-35, Gln-43 to Thr-49.
HOSNF25R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1661 as residues: Pro-29 to Arg-36.
HPIAC23R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1663 as residues: Thr-62 to Thr-69.
HRAAD31R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1664 as residues: Val-1 to Thr-6, Arg-64 to Arg-69.
HRADJ57R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1666 as residues: Val-11 to Gln-16.
HROAX48R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1667 as residues: Gly-7 to Thr-20.
HTWDH05R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1670 as residues: Ala-5 to Lys-11, Arg-29 to Ser-36.
HUTHF75R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1673 as residues: Lys-40 to Gly-47.
HWAFW07R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1674 as residues: Phe-44 to Arg-49.
HWLLX91R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1676 as residues: Gly-29 to Asp-34.
HMIA178R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1678 as residues: Lys-24 to Arg-29, Cys-34 to Ala-41.
HBGFJ39R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1679 as residues: Leu-21 to Asp-38.
HAMHH32R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1680 as residues: Ala-1 to Cys-10, Glu-15 to Gln-21.
HOSNE37R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1683 as residues: Lys-17 to Thr-23.
HWAFE41R	Preferred epitopes include those comprising a sequence shown in SEQ ID NO. 1684 as residues: Ser-3 to Lys-8, Trp-92 to Leu-97.

The present invention encompasses polypeptides comprising, or alternatively consisting of, an epitope of the polypeptide sequence shown in SEQ ID NO:Y, or an epitope of the polypeptide sequence encoded by the cDNA in the related cDNA clone contained in a deposited library or encoded by a polynucleotide that hybridizes to the complement of an epitope encoding sequence of SEQ ID NO:X, or an epitope encoding sequence contained in the deposited cDNA clone under stringent hybridization conditions, or alternatively, under lower stringency hybridization conditions, as defined supra. The present invention further encompasses polynucleotide sequences encoding an epitope of a polypeptide sequence of the invention (such as, for example, the sequence disclosed in SEQ ID NO:X), polynucleotide sequences of the complementary strand of a polynucleotide sequence encoding an epitope of the invention, and polynucleotide sequences which hybridize to this complementary strand under stringent hybridization conditions or alternatively, under lower stringency hybridization conditions, as defined supra.

The term "epitopes," as used herein, refers to portions of a polypeptide having antigenic or immunogenic activity in an animal, preferably a mammal, and most preferably in a human. In a preferred embodiment, the present invention encompasses a polypeptide comprising an epitope, as well as the polynucleotide encoding this polypeptide. An "immunogenic epitope," as used herein, is defined as a portion of a protein that elicits an antibody response in an animal, as determined by any method known in the art, for example, by the methods for generating antibodies described infra. (See, for example, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998- 4002 (1983)). The term "antigenic epitope," as used herein, is defined as a portion of a protein to which an antibody can immunospecifically bind its antigen as determined by any method well known in the art, for example, by the immunoassays described herein. Immunospecific binding excludes non-specific binding but does not necessarily exclude cross- reactivity with other antigens. Antigenic epitopes need not necessarily be immunogenic.

Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

In the present invention, antigenic epitopes preferably contain a sequence of at  
5 least 4, at least 5, at least 6, at least 7, more preferably at least 8, at least 9, at least  
10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 20, at least 25, at  
least 30, at least 40, at least 50, and, most preferably, between about 15 to about 30  
amino acids. Preferred polypeptides comprising immunogenic or antigenic epitopes  
are at least 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100  
10 amino acid residues in length. Additional non-exclusive preferred antigenic epitopes  
include the antigenic epitopes disclosed herein, as well as portions thereof. Antigenic  
epitopes are useful, for example, to raise antibodies, including monoclonal antibodies,  
that specifically bind the epitope. Preferred antigenic epitopes include the antigenic  
epitopes disclosed herein, as well as any combination of two, three, four, five or more  
15 of these antigenic epitopes. Antigenic epitopes can be used as the target molecules in  
immunoassays. (See, for instance, Wilson et al., Cell 37:767-778 (1984); Sutcliffe et  
al., Science 219:660-666 (1983)).

Similarly, immunogenic epitopes can be used, for example, to induce  
antibodies according to methods well known in the art. (See, for instance, Sutcliffe  
20 et al., supra; Wilson et al., supra; Chow et al., Proc. Natl. Acad. Sci. USA 82:910-  
914; and Bittle et al., J. Gen. Virol. 66:2347-2354 (1985). Preferred immunogenic  
epitopes include the immunogenic epitopes disclosed herein, as well as any  
combination of two, three, four, five or more of these immunogenic epitopes. The  
polypeptides comprising one or more immunogenic epitopes may be presented for  
25 eliciting an antibody response together with a carrier protein, such as an albumin, to  
an animal system (such as rabbit or mouse), or, if the polypeptide is of sufficient  
length (at least about 25 amino acids), the polypeptide may be presented without a  
carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids  
have been shown to be sufficient to raise antibodies capable of binding to, at the very  
30 least, linear epitopes in a denatured polypeptide (e.g., in Western blotting).

Epitope-bearing polypeptides of the present invention may be used to induce antibodies according to methods well known in the art including, but not limited to, in vivo immunization, in vitro immunization, and phage display methods. See, e.g., Sutcliffe et al., supra; Wilson et al., supra, and Bittle et al., J. Gen. Virol., 66:2347-2354 (1985). If in vivo immunization is used, animals may be immunized with free peptide; however, anti-peptide antibody titer may be boosted by coupling the peptide to a macromolecular carrier, such as keyhole limpet hemacyanin (KLH) or tetanus toxoid. For instance, peptides containing cysteine residues may be coupled to a carrier using a linker such as maleimidobenzoyl- N-hydroxysuccinimide ester (MBS), while other peptides may be coupled to carriers using a more general linking agent such as glutaraldehyde. Animals such as rabbits, rats and mice are immunized with either free or carrier- coupled peptides, for instance, by intraperitoneal and/or intradermal injection of emulsions containing about 100 µg of peptide or carrier protein and Freund's adjuvant or any other adjuvant known for stimulating an immune response. Several booster injections may be needed, for instance, at intervals of about two weeks, to provide a useful titer of anti-peptide antibody which can be detected, for example, by ELISA assay using free peptide adsorbed to a solid surface. The titer of anti-peptide antibodies in serum from an immunized animal may be increased by selection of anti-peptide antibodies, for instance, by adsorption to the peptide on a solid support and elution of the selected antibodies according to methods well known in the art.

As one of skill in the art will appreciate, and as discussed above, the polypeptides of the present invention, and immunogenic and/or antigenic epitope fragments thereof can be fused to other polypeptide sequences. For example, the polypeptides of the present invention may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM), or portions thereof (CH1, CH2, CH3, or any combination thereof and portions thereof) resulting in chimeric polypeptides. Such fusion proteins may facilitate purification and may increase half-life in vivo. This has been shown for chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light

chains of mammalian immunoglobulins. See, e.g., EP 394,827; Traunecker et al., Nature, 331:84-86 (1988). Enhanced delivery of an antigen across the epithelial barrier to the immune system has been demonstrated for antigens (e.g., insulin) conjugated to an FcRn binding partner such as IgG or Fc fragments (see, e.g., PCT Publications WO 96/22024 and WO 99/04813). IgG Fusion proteins that have a disulfide-linked dimeric structure due to the IgG portion disulfide bonds have also been found to be more efficient in binding and neutralizing other molecules than monomeric polypeptides or fragments thereof alone. See, e.g., Fountoulakis et al., J. Biochem., 270:3958-3964 (1995).

10 Similarly, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. (EP-A 0232 262.) Alternatively,

15 deleting the Fc part after the fusion protein has been expressed, detected, and purified, may be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See,

20 D. Bennett et al., J. Molecular Recognition 8:52-58 (1995); K. Johanson et al., J. Biol. Chem. 270:9459-9471 (1995).)

Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a peptide which facilitates purification of the fused polypeptide. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue,

25 Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope



derived from the influenza hemagglutinin protein. (Wilson et al., Cell 37:767 (1984).)

Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the present invention.

5 Nucleic acids encoding the above epitopes can also be recombined with a gene of interest as an epitope tag (e.g., the hemagglutinin ("HA") tag or flag tag) to aid in detection and purification of the expressed polypeptide. For example, a system described by Janknecht et al. allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht et al., Proc. Natl. Acad. Sci. USA 10 88:8972- 897 (1991)). In this system, the gene of interest is subcloned into a vaccinia recombination plasmid such that the open reading frame of the gene is translationally fused to an amino-terminal tag consisting of six histidine residues. The tag serves as a matrix binding domain for the fusion protein. Extracts from cells infected with the recombinant vaccinia virus are loaded onto Ni<sup>2+</sup> nitriloacetic acid-agarose column and histidine-tagged proteins can be selectively eluted with imidazole-containing 15 buffers.

Additional fusion proteins of the invention may be generated through the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling"). DNA shuffling may be employed to 20 modulate the activities of polypeptides of the invention, such methods can be used to generate polypeptides with altered activity, as well as agonists and antagonists of the polypeptides. See, generally, U.S. Patent Nos. 5,605,793; 5,811,238; 5,830,721; 5,834,252; and 5,837,458, and Patten et al., Curr. Opinion Biotechnol. 8:724-33 (1997); Harayama, Trends Biotechnol. 16(2):76-82 (1998); Hansson, et al., J. Mol. 25 Biol. 287:265-76 (1999); and Lorenzo and Blasco, Biotechniques 24(2):308- 13 (1998) (each of these patents and publications are hereby incorporated by reference in its entirety). In one embodiment, alteration of polynucleotides corresponding to SEQ ID NO:X and the polypeptides encoded by these polynucleotides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA 30 segments by homologous or site-specific recombination to generate variation in the

polynucleotide sequence. In another embodiment, polynucleotides of the invention, or the encoded polypeptides, may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs, sections, 5 parts, domains, fragments, etc., of a polynucleotide encoding a polypeptide of the invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules.

As discussed herein, any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when 10 fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular locations based on trafficking signals, polypeptides of the present invention which are shown to be secreted can be used as targeting molecules once fused to other 15 proteins.

Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

20 In certain preferred embodiments, proteins of the invention comprise fusion proteins wherein the polypeptides are N and/or C- terminal deletion mutants. In preferred embodiments, the application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to the nucleic acid sequences encoding polypeptides having the amino acid sequence of the specific N- and 25 C-terminal deletions mutants. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids, particularly charged amino acids, may be added to the N-terminus of the 30 polypeptide to improve stability and persistence during purification from the host cell

or subsequent handling and storage. Also, peptide moieties may be added to the polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

5

#### **Vectors, Host Cells, and Protein Production**

The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or retroviral  
10 vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

The polynucleotides of the invention may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced  
15 in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid. If the vector is a virus, it may be packaged in vitro using an appropriate packaging cell line and then transduced into host cells.

The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the E. coli lac, trp, phoA and tac  
20 promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a  
25 translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418 or neomycin resistance for eukaryotic cell culture and tetracycline, kanamycin or ampicillin  
30 resistance genes for culturing in E. coli and other bacteria. Representative examples

of appropriate hosts include, but are not limited to, bacterial cells, such as *E. coli*, *Streptomyces* and *Salmonella typhimurium* cells; fungal cells, such as yeast cells (e.g., *Saccharomyces cerevisiae* or *Pichia pastoris* (ATCC Accession No. 201178)); insect cells such as *Drosophila* S2 and *Spodoptera* Sf9 cells; animal cells such as CHO, COS, 293, and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; and pSVK3, pBPV, pMSG and pSVL available from Pharmacia. Preferred expression vectors for use in yeast systems include, but are not limited to pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalph, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, pPIC9K, and PAO815 (all available from Invitrogen, Carlsbad, CA). Other suitable vectors will be readily apparent to the skilled artisan.

Introduction of the construct into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction, infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., *Basic Methods In Molecular Biology* (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

A polypeptide of this invention can be recovered and purified from recombinant cell cultures by well-known methods including ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most

preferably, high performance liquid chromatography ("HPLC") is employed for purification.

Polypeptides of the present invention can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether  
5 directly isolated or cultured; products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast, higher plant, insect, and mammalian cells. Depending upon the host employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition,  
10 polypeptides of the invention may also include an initial modified methionine residue, in some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal methionine on most proteins also is efficiently removed  
15 in most prokaryotes, for some proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

In one embodiment, the yeast *Pichia pastoris* is used to express polypeptides of the invention in a eukaryotic system. *Pichia pastoris* is a methylotrophic yeast  
20 which can metabolize methanol as its sole carbon source. A main step in the methanol metabolism pathway is the oxidation of methanol to formaldehyde using O<sub>2</sub>. This reaction is catalyzed by the enzyme alcohol oxidase. In order to metabolize methanol as its sole carbon source, *Pichia pastoris* must generate high levels of alcohol oxidase due, in part, to the relatively low affinity of alcohol oxidase for O<sub>2</sub>.  
25 Consequently, in a growth medium depending on methanol as a main carbon source, the promoter region of one of the two alcohol oxidase genes (*AOX1*) is highly active. In the presence of methanol, alcohol oxidase produced from the *AOX1* gene comprises up to approximately 30% of the total soluble protein in *Pichia pastoris*. See, Ellis, S.B., *et al.*, *Mol. Cell. Biol.* 5:1111-21 (1985); Koutz, P.J., *et al.*, *Yeast*

5:167-77 (1989); Tschopp, J.F., *et al.*, *Nucl. Acids Res.* 15:3859-76 (1987). Thus, a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, under the transcriptional regulation of all or part of the *AOX1* regulatory sequence is expressed at exceptionally high levels in *Pichia* yeast grown in the presence of methanol.

10 In one example, the plasmid vector pPIC9K is used to express DNA encoding a polypeptide of the invention, as set forth herein, in a *Pichea* yeast system essentially as described in "*Pichia* Protocols: Methods in Molecular Biology," D.R. Higgins and J. Cregg, eds. The Humana Press, Totowa, NJ, 1998. This expression vector allows expression and secretion of a polypeptide of the invention by virtue of the strong *AOX1* promoter linked to the *Pichia pastoris* alkaline phosphatase (PHO) secretory signal peptide (i.e., leader) located upstream of a multiple cloning site.

15 Many other yeast vectors could be used in place of pPIC9K, such as, pYES2, pYDI, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalpha, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, and PAO815, as one skilled in the art would readily appreciate, as long as the proposed expression construct provides appropriately located signals for transcription, translation, secretion (if desired), and the like, including an in-frame AUG as required.

20 In another embodiment, high-level expression of a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, may be achieved by cloning the heterologous polynucleotide of the invention into an expression vector such as, for example, pGAPZ or pGAPZalpha, and growing the yeast culture in the absence of methanol.

25 In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and

which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

10 In addition, polypeptides of the invention can be chemically synthesized using techniques known in the art (e.g., see Creighton, 1983, Proteins: Structures and Molecular Principles, W.H. Freeman & Co., N.Y., and Hunkapiller et al., *Nature*, 310:105-111 (1984)). For example, a polypeptide corresponding to a fragment of a polypeptide can be synthesized by use of a peptide synthesizer. Furthermore, if  
15 desired, nonclassical amino acids or chemical amino acid analogs can be introduced as a substitution or addition into the polypeptide sequence. Non-classical amino acids include, but are not limited to, to the D-isomers of the common amino acids, 2,4-diaminobutyric acid,  $\alpha$ -amino isobutyric acid, 4-aminobutyric acid, Abu, 2-amino butyric acid, g-Abu, e-Ahx, 6-amino hexanoic acid, Aib, 2-amino isobutyric acid,  
20 3-amino propionic acid, ornithine, norleucine, norvaline, hydroxyproline, sarcosine, citrulline, homocitrulline, cysteic acid, t-butylglycine, t-butylalanine, phenylglycine, cyclohexylalanine, b-alanine, fluoro-amino acids, designer amino acids such as b-methyl amino acids, Ca-methyl amino acids, Na-methyl amino acids, and amino acid analogs in general. Furthermore, the amino acid can be D (dextrorotary) or L  
25 (levorotary).

Non-naturally occurring variants may be produced using art-known mutagenesis techniques, which include, but are not limited to oligonucleotide mediated mutagenesis, alanine scanning, PCR mutagenesis, site directed mutagenesis (see, e.g., Carter et al., *Nucl. Acids Res.* 13:4331 (1986); and Zoller et al., *Nucl. Acids Res.* 10:6487 (1982)), cassette mutagenesis (see, e.g., Wells et al., *Gene* 34:315  
30

(1985)), restriction selection mutagenesis (*see, e.g., Wells et al., Philos. Trans. R. Soc. London SerA 317:415 (1986)*).

The invention additionally, encompasses polypeptides of the present invention which are differentially modified during or after translation, e.g., by glycosylation, acetylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to an antibody molecule or other cellular ligand, etc. Any of numerous chemical modifications may be carried out by known techniques, including but not limited, to specific chemical cleavage by cyanogen bromide, trypsin, chymotrypsin, papain, V8 protease, NaBH<sub>4</sub>; acetylation, formylation, oxidation, reduction; metabolic synthesis in the presence of tunicamycin; etc.

Additional post-translational modifications encompassed by the invention include, for example, e.g., N-linked or O-linked carbohydrate chains, processing of N-terminal or C-terminal ends), attachment of chemical moieties to the amino acid backbone, chemical modifications of N-linked or O-linked carbohydrate chains, and addition or deletion of an N-terminal methionine residue as a result of procaryotic host cell expression. The polypeptides may also be modified with a detectable label, such as an enzymatic, fluorescent, isotopic or affinity label to allow for detection and isolation of the protein.

Also provided by the invention are chemically modified derivatives of the polypeptides of the invention which may provide additional advantages such as increased solubility, stability and circulating time of the polypeptide, or decreased immunogenicity (see U.S. Patent No. 4,179,337). The chemical moieties for derivitization may be selected from water soluble polymers such as polyethylene glycol, ethylene glycol/propylene glycol copolymers, carboxymethylcellulose, dextran, polyvinyl alcohol and the like. The polypeptides may be modified at random positions within the molecule, or at predetermined positions within the molecule and may include one, two, three or more attached chemical moieties.

The polymer may be of any molecular weight, and may be branched or unbranched. For polyethylene glycol, the preferred molecular weight is between



about 1 kDa and about 100 kDa (the term "about" indicating that in preparations of polyethylene glycol, some molecules will weigh more, some less, than the stated molecular weight) for ease in handling and manufacturing. Other sizes may be used, depending on the desired therapeutic profile (e.g., the duration of sustained release  
5 desired, the effects, if any on biological activity, the ease in handling, the degree or lack of antigenicity and other known effects of the polyethylene glycol to a therapeutic protein or analog). For example, the polyethylene glycol may have an average molecular weight of about 200; 500; 1000; 1500; 2000; 2500; 3000; 3500; 4000; 4500; 5000; 5500; 6000; 6500; 7000; 7500; 8000; 8500; 9000; 9500; 10,000;  
10 10,500; 11,000; 11,500; 12,000; 12,500; 13,000; 13,500; 14,000; 14,500; 15,000; 15,500; 16,000; 16,500; 17,000; 17,500; 18,000; 18,500; 19,000; 19,500; 20,000; 25,000; 30,000; 35,000; 40,000; 50,000; 55,000; 60,000; 65,000; 70,000; 75,000; 80,000; 85,000; 90,000; 95,000; or 100,000 kDa.

As noted above, the polyethylene glycol may have a branched structure.  
15 Branched polyethylene glycols are described, for example, in U.S. Patent No. 5,643,575; Morpurgo *et al.*, *Appl. Biochem. Biotechnol.* 56:59-72 (1996); Vorobjev *et al.*, *Nucleosides Nucleotides* 18:2745-2750 (1999); and Caliceti *et al.*, *Bioconjug. Chem.* 10:638-646 (1999), the disclosures of each of which are incorporated herein by reference.

20 The polyethylene glycol molecules (or other chemical moieties) should be attached to the protein with consideration of effects on functional or antigenic domains of the protein. There are a number of attachment methods available to those skilled in the art, e.g., EP 0 401 384, herein incorporated by reference (coupling PEG to G-CSF), see also Malik *et al.*, *Exp. Hematol.* 20:1028-1035 (1992) (reporting  
25 pegylation of GM-CSF using tresyl chloride). For example, polyethylene glycol may be covalently bound through amino acid residues via a reactive group, such as, a free amino or carboxyl group. Reactive groups are those to which an activated polyethylene glycol molecule may be bound. The amino acid residues having a free amino group may include lysine residues and the N-terminal amino acid residues;  
30 those having a free carboxyl group may include aspartic acid residues glutamic acid

residues and the C-terminal amino acid residue. Sulfhydryl groups may also be used as a reactive group for attaching the polyethylene glycol molecules. Preferred for therapeutic purposes is attachment at an amino group, such as attachment at the N-terminus or lysine group.

5       As suggested above, polyethylene glycol may be attached to proteins via linkage to any of a number of amino acid residues. For example, polyethylene glycol can be linked to a proteins via covalent bonds to lysine, histidine, aspartic acid, glutamic acid, or cysteine residues. One or more reaction chemistries may be employed to attach polyethylene glycol to specific amino acid residues (e.g., lysine,  
10   histidine, aspartic acid, glutamic acid, or cysteine) of the protein or to more than one type of amino acid residue (e.g., lysine, histidine, aspartic acid, glutamic acid, cysteine and combinations thereof) of the protein.

One may specifically desire proteins chemically modified at the N-terminus. Using polyethylene glycol as an illustration of the present composition, one may  
15   select from a variety of polyethylene glycol molecules (by molecular weight, branching, etc.), the proportion of polyethylene glycol molecules to protein (polypeptide) molecules in the reaction mix, the type of pegylation reaction to be performed, and the method of obtaining the selected N-terminally pegylated protein. The method of obtaining the N-terminally pegylated preparation (i.e., separating this  
20   moiety from other monopegylated moieties if necessary) may be by purification of the N-terminally pegylated material from a population of pegylated protein molecules. Selective proteins chemically modified at the N-terminus modification may be accomplished by reductive alkylation which exploits differential reactivity of different types of primary amino groups (lysine versus the N-terminal) available for  
25   derivatization in a particular protein. Under the appropriate reaction conditions, substantially selective derivatization of the protein at the N-terminus with a carbonyl group containing polymer is achieved.

As indicated above, pegylation of the proteins of the invention may be accomplished by any number of means. For example, polyethylene glycol may be  
30   attached to the protein either directly or by an intervening linker. Linkerless systems

for attaching polyethylene glycol to proteins are described in Delgado *et al.*, *Crit. Rev. Thera. Drug Carrier Sys.* 9:249-304 (1992); Francis *et al.*, *Intern. J. of Hematol.* 68:1-18 (1998); U.S. Patent No. 4,002,531; U.S. Patent No. 5,349,052; WO 95/06058; and WO 98/32466, the disclosures of each of which are incorporated  
5 herein by reference.

One system for attaching polyethylene glycol directly to amino acid residues of proteins without an intervening linker employs tresylated MPEG, which is produced by the modification of monmethoxy polyethylene glycol (MPEG) using tresylchloride ( $\text{ClSO}_2\text{CH}_2\text{CF}_3$ ). Upon reaction of protein with tresylated MPEG,  
10 polyethylene glycol is directly attached to amine groups of the protein. Thus, the invention includes protein-polyethylene glycol conjugates produced by reacting proteins of the invention with a polyethylene glycol molecule having a 2,2,2-trifluoroethane sulphonyl group.

Polyethylene glycol can also be attached to proteins using a number of  
15 different intervening linkers. For example, U.S. Patent No. 5,612,460, the entire disclosure of which is incorporated herein by reference, discloses urethane linkers for connecting polyethylene glycol to proteins. Protein-polyethylene glycol conjugates wherein the polyethylene glycol is attached to the protein by a linker can also be produced by reaction of proteins with compounds such as MPEG-  
20 succinimidylsuccinate, MPEG activated with 1,1'-carbonyldiimidazole, MPEG-2,4,5-trichloropenylcarbonate, MPEG-p-nitrophenolcarbonate, and various MPEG-succinate derivatives. A number additional polyethylene glycol derivatives and reaction chemistries for attaching polyethylene glycol to proteins are described in WO 98/32466, the entire disclosure of which is incorporated herein by reference.  
25 Pegylated protein products produced using the reaction chemistries set out herein are included within the scope of the invention.

The number of polyethylene glycol moieties attached to each protein of the invention (*i.e.*, the degree of substitution) may also vary. For example, the pegylated proteins of the invention may be linked, on average, to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12,  
30 15, 17, 20, or more polyethylene glycol molecules. Similarly, the average degree of

substitution within ranges such as 1-3, 2-4, 3-5, 4-6, 5-7, 6-8, 7-9, 8-10, 9-11, 10-12, 11-13, 12-14, 13-15, 14-16, 15-17, 16-18, 17-19, or 18-20 polyethylene glycol moieties per protein molecule. Methods for determining the degree of substitution are discussed, for example, in Delgado *et al.*, *Crit. Rev. Thera. Drug Carrier Sys.* 9:249-304 (1992).

The cancer antigen polypeptides of the invention may be in monomers or multimers (i.e., dimers, trimers, tetramers and higher multimers). Accordingly, the present invention relates to monomers and multimers of the polypeptides of the invention, their preparation, and compositions (preferably, Therapeutics) containing them. In specific embodiments, the polypeptides of the invention are monomers, dimers, trimers or tetramers. In additional embodiments, the multimers of the invention are at least dimers, at least trimers, or at least tetramers.

Multimers encompassed by the invention may be homomers or heteromers. As used herein, the term homomer, refers to a multimer containing only polypeptides corresponding to the amino acid sequence of SEQ ID NO:Y or an amino acid sequence encoded by SEQ ID NO:X, and/or an amino acid sequence encoded by the cDNA in a related cDNA clone contained in a deposited library (including fragments, variants, splice variants, and fusion proteins, corresponding to any one of these as described herein). These homomers may contain polypeptides having identical or different amino acid sequences. In a specific embodiment, a homomer of the invention is a multimer containing only polypeptides having an identical amino acid sequence. In another specific embodiment, a homomer of the invention is a multimer containing polypeptides having different amino acid sequences. In specific embodiments, the multimer of the invention is a homodimer (e.g., containing polypeptides having identical or different amino acid sequences) or a homotrimer (e.g., containing polypeptides having identical and/or different amino acid sequences). In additional embodiments, the homomeric multimer of the invention is at least a homodimer, at least a homotrimer, or at least a homotetramer.

As used herein, the term heteromer refers to a multimer containing one or more heterologous polypeptides (i.e., polypeptides of different proteins) in addition to

the polypeptides of the invention. In a specific embodiment, the multimer of the invention is a heterodimer, a heterotrimer, or a heterotetramer. In additional embodiments, the heteromeric multimer of the invention is at least a heterodimer, at least a heterotrimer, or at least a heterotetramer.

5           Multimers of the invention may be the result of hydrophobic, hydrophilic, ionic and/or covalent associations and/or may be indirectly linked, by for example, liposome formation. Thus, in one embodiment, multimers of the invention, such as, for example, homodimers or homotrimers, are formed when polypeptides of the invention contact one another in solution. In another embodiment, heteromultimers  
10 of the invention, such as, for example, heterotrimers or heterotetramers, are formed when polypeptides of the invention contact antibodies to the polypeptides of the invention (including antibodies to the heterologous polypeptide sequence in a fusion protein of the invention) in solution. In other embodiments, multimers of the invention are formed by covalent associations with and/or between the polypeptides  
15 of the invention. Such covalent associations may involve one or more amino acid residues contained in the polypeptide sequence (e.g., that recited in SEQ ID NO:Y, or contained in a polypeptide encoded by SEQ ID NO:X, and/or by the cDNA in the related cDNA clone contained in a deposited library). In one instance, the covalent associations are cross-linking between cysteine residues located within the  
20 polypeptide sequences which interact in the native (i.e., naturally occurring) polypeptide. In another instance, the covalent associations are the consequence of chemical or recombinant manipulation. Alternatively, such covalent associations may involve one or more amino acid residues contained in the heterologous polypeptide sequence in a fusion protein. In one example, covalent associations are between the  
25 heterologous sequence contained in a fusion protein of the invention (see, e.g., US Patent Number 5,478,925). In a specific example, the covalent associations are between the heterologous sequence contained in a Fc fusion protein of the invention (as described herein). In another specific example, covalent associations of fusion proteins of the invention are between heterologous polypeptide sequence from  
30 another protein that is capable of forming covalently associated multimers, such as for

example, osteoprotegerin (see, e.g., International Publication NO: WO 98/49305, the contents of which are herein incorporated by reference in its entirety). In another embodiment, two or more polypeptides of the invention are joined through peptide linkers. Examples include those peptide linkers described in U.S. Pat. No. 5,073,627 (hereby incorporated by reference). Proteins comprising multiple polypeptides of the invention separated by peptide linkers may be produced using conventional recombinant DNA technology.

Another method for preparing multimer polypeptides of the invention involves use of polypeptides of the invention fused to a leucine zipper or isoleucine zipper polypeptide sequence. Leucine zipper and isoleucine zipper domains are polypeptides that promote multimerization of the proteins in which they are found. Leucine zippers were originally identified in several DNA-binding proteins (Landschulz et al., Science 240:1759, (1988)), and have since been found in a variety of different proteins. Among the known leucine zippers are naturally occurring peptides and derivatives thereof that dimerize or trimerize. Examples of leucine zipper domains suitable for producing soluble multimeric proteins of the invention are those described in PCT application WO 94/10308, hereby incorporated by reference. Recombinant fusion proteins comprising a polypeptide of the invention fused to a polypeptide sequence that dimerizes or trimerizes in solution are expressed in suitable host cells, and the resulting soluble multimeric fusion protein is recovered from the culture supernatant using techniques known in the art.

Trimeric polypeptides of the invention may offer the advantage of enhanced biological activity. Preferred leucine zipper moieties and isoleucine moieties are those that preferentially form trimers. One example is a leucine zipper derived from lung surfactant protein D (SPD), as described in Hoppe et al. (FEBS Letters 344:191, (1994)) and in U.S. patent application Ser. No. 08/446,922, hereby incorporated by reference. Other peptides derived from naturally occurring trimeric proteins may be employed in preparing trimeric polypeptides of the invention.

In another example, proteins of the invention are associated by interactions between Flag® polypeptide sequence contained in fusion proteins of the invention

containing Flag® polypeptide sequence. In a further embodiment, associations proteins of the invention are associated by interactions between heterologous polypeptide sequence contained in Flag® fusion proteins of the invention and anti-Flag® antibody.

5           The multimers of the invention may be generated using chemical techniques known in the art. For example, polypeptides desired to be contained in the multimers of the invention may be chemically cross-linked using linker molecules and linker molecule length optimization techniques known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

10   Additionally, multimers of the invention may be generated using techniques known in the art to form one or more inter-molecule cross-links between the cysteine residues located within the sequence of the polypeptides desired to be contained in the multimer (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Further, polypeptides of the invention may be routinely

15   modified by the addition of cysteine or biotin to the C-terminus or N-terminus of the polypeptide and techniques known in the art may be applied to generate multimers containing one or more of these modified polypeptides (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, techniques known in the art may be applied to generate liposomes containing the

20   polypeptide components desired to be contained in the multimer of the invention (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

          Alternatively, multimers of the invention may be generated using genetic engineering techniques known in the art. In one embodiment, polypeptides contained

25   in multimers of the invention are produced recombinantly using fusion protein technology described herein or otherwise known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In a specific embodiment, polynucleotides coding for a homodimer of the invention are generated by ligating a polynucleotide sequence encoding a polypeptide of the

30   invention to a sequence encoding a linker polypeptide and then further to a synthetic

polynucleotide encoding the translated product of the polypeptide in the reverse orientation from the original C-terminus to the N-terminus (lacking the leader sequence) (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In another embodiment, recombinant techniques described  
5 herein or otherwise known in the art are applied to generate recombinant polypeptides of the invention which contain a transmembrane domain (or hydrophobic or signal peptide) and which can be incorporated by membrane reconstitution techniques into liposomes (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

10

### Antibodies

Further polypeptides of the invention relate to antibodies and T-cell antigen receptors (TCR) which immunospecifically bind a polypeptide, polypeptide fragment, or variant of SEQ ID NO:Y, and/or an epitope, of the present invention (as  
15 determined by immunoassays well known in the art for assaying specific antibody-antigen binding). Antibodies of the invention include, but are not limited to, polyclonal, monoclonal, multispecific, human, humanized or chimeric antibodies, single chain antibodies, Fab fragments, F(ab') fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies (including, e.g., anti-Id  
20 antibodies to antibodies of the invention), and epitope-binding fragments of any of the above. The term "antibody," as used herein, refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, i.e., molecules that contain an antigen binding site that immunospecifically binds an antigen. The immunoglobulin molecules of the invention can be of any type (e.g., IgG, IgE, IgM, IgD, IgA and IgY), class (e.g., IgG1, IgG2, IgG3, IgG4, IgA1 and IgA2) or subclass  
25 of immunoglobulin molecule.

Most preferably the antibodies are human antigen-binding antibody fragments of the present invention and include, but are not limited to, Fab, Fab' and F(ab')<sub>2</sub>, Fd, single-chain Fvs (scFv), single-chain antibodies, disulfide-linked Fvs (sdFv) and  
30 fragments comprising either a VL or VH domain. Antigen-binding antibody

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fragments, including single-chain antibodies, may comprise the variable region(s) alone or in combination with the entirety or a portion of the following: hinge region, CH1, CH2, and CH3 domains. Also included in the invention are antigen-binding fragments also comprising any combination of variable region(s) with a hinge region, CH1, CH2, and CH3 domains. The antibodies of the invention may be from any animal origin including birds and mammals. Preferably, the antibodies are human, murine (e.g., mouse and rat), donkey, ship rabbit, goat, guinea pig, camel, horse, or chicken. As used herein, "human" antibodies include antibodies having the amino acid sequence of a human immunoglobulin and include antibodies isolated from human immunoglobulin libraries or from animals transgenic for one or more human immunoglobulin and that do not express endogenous immunoglobulins, as described infra and, for example in, U.S. Patent No. 5,939,598 by Kucherlapati et al.

The antibodies of the present invention may be monospecific, bispecific, trispecific or of greater multispecificity. Multispecific antibodies may be specific for different epitopes of a polypeptide of the present invention or may be specific for both a polypeptide of the present invention as well as for a heterologous epitope, such as a heterologous polypeptide or solid support material. See, e.g., PCT publications WO 93/17715; WO 92/08802; WO 91/00360; WO 92/05793; Tutt, et al., J. Immunol. 147:60-69 (1991); U.S. Patent Nos. 4,474,893; 4,714,681; 4,925,648; 5,573,920; 5,601,819; Kostelny et al., J. Immunol. 148:1547-1553 (1992).

Antibodies of the present invention may be described or specified in terms of the epitope(s) or portion(s) of a polypeptide of the present invention which they recognize or specifically bind. The epitope(s) or polypeptide portion(s) may be specified as described herein, e.g., by N-terminal and C-terminal positions, or by size in contiguous amino acid residues. Antibodies which specifically bind any epitope or polypeptide of the present invention may also be excluded. Therefore, the present invention includes antibodies that specifically bind polypeptides of the present invention, and allows for the exclusion of the same.

Antibodies of the present invention may also be described or specified in terms of their cross-reactivity. Antibodies that do not bind any other analog, ortholog,

or homolog of a polypeptide of the present invention are included. Antibodies that bind polypeptides with at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 65%, at least 60%, at least 55%, and at least 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In specific embodiments, antibodies of the present invention cross-react with murine, rat and/or rabbit homologs of human proteins and the corresponding epitopes thereof. Antibodies that do not bind polypeptides with less than 95%, less than 90%, less than 85%, less than 80%, less than 75%, less than 70%, less than 65%, less than 60%, less than 55%, and less than 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In a specific embodiment, the above-described cross-reactivity is with respect to any single specific antigenic or immunogenic polypeptide, or combination(s) of 2, 3, 4, 5, or more of the specific antigenic and/or immunogenic polypeptides disclosed herein. Further included in the present invention are antibodies which bind polypeptides encoded by polynucleotides which hybridize to a polynucleotide of the present invention under stringent hybridization conditions (as described herein). Antibodies of the present invention may also be described or specified in terms of their binding affinity to a polypeptide of the invention. Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-2}$  M,  $10^{-2}$  M,  $5 \times 10^{-3}$  M,  $10^{-3}$  M,  $5 \times 10^{-4}$  M,  $10^{-4}$  M,  $5 \times 10^{-5}$  M,  $10^{-5}$  M,  $5 \times 10^{-6}$  M,  $10^{-6}$  M,  $5 \times 10^{-7}$  M,  $10^{-7}$  M,  $5 \times 10^{-8}$  M,  $10^{-8}$  M,  $5 \times 10^{-9}$  M,  $10^{-9}$  M,  $5 \times 10^{-10}$  M,  $10^{-10}$  M,  $5 \times 10^{-11}$  M,  $10^{-11}$  M,  $5 \times 10^{-12}$  M,  $10^{-12}$  M,  $5 \times 10^{-13}$  M,  $10^{-13}$  M,  $5 \times 10^{-14}$  M,  $10^{-14}$  M,  $5 \times 10^{-15}$  M, or  $10^{-15}$  M.

The invention also provides antibodies that competitively inhibit binding of an antibody to an epitope of the invention as determined by any method known in the art for determining competitive binding, for example, the immunoassays described herein. In preferred embodiments, the antibody competitively inhibits binding to the epitope by at least 95%, at least 90%, at least 85 %, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50%.

Antibodies of the present invention may act as agonists or antagonists of the polypeptides of the present invention. For example, the present invention includes antibodies which disrupt the receptor/ligand interactions with the polypeptides of the invention either partially or fully. Preferably, antibodies of the present invention  
5 bind an antigenic epitope disclosed herein, or a portion thereof. The invention features both receptor-specific antibodies and ligand-specific antibodies. The invention also features receptor-specific antibodies which do not prevent ligand binding but prevent receptor activation. Receptor activation (i.e., signaling) may be determined by techniques described herein or otherwise known in the art. For example, receptor  
10 activation can be determined by detecting the phosphorylation (e.g., tyrosine or serine/threonine) of the receptor or its substrate by immunoprecipitation followed by western blot analysis (for example, as described supra). In specific embodiments, antibodies are provided that inhibit ligand activity or receptor activity by at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 60%, or at  
15 least 50% of the activity in absence of the antibody.

The invention also features receptor-specific antibodies which both prevent ligand binding and receptor activation as well as antibodies that recognize the receptor-ligand complex, and, preferably, do not specifically recognize the unbound receptor or the unbound ligand. Likewise, included in the invention are neutralizing  
20 antibodies which bind the ligand and prevent binding of the ligand to the receptor, as well as antibodies which bind the ligand, thereby preventing receptor activation, but do not prevent the ligand from binding the receptor. Further included in the invention are antibodies which activate the receptor. These antibodies may act as receptor agonists, i.e., potentiate or activate either all or a subset of the biological activities of  
25 the ligand-mediated receptor activation, for example, by inducing dimerization of the receptor. The antibodies may be specified as agonists, antagonists or inverse agonists for biological activities comprising the specific biological activities of the peptides of the invention disclosed herein. The above antibody agonists can be made using methods known in the art. See, e.g., PCT publication WO 96/40281; U.S. Patent No.  
30 5,811,097; Deng et al., Blood 92(6):1981-1988 (1998); Chen et al., Cancer Res.

58(16):3668-3678 (1998); Harrop et al., *J. Immunol.* 161(4):1786-1794 (1998); Zhu et al., *Cancer Res.* 58(15):3209-3214 (1998); Yoon et al., *J. Immunol.* 160(7):3170-3179 (1998); Prat et al., *J. Cell. Sci.* 111(Pt2):237-247 (1998); Pitard et al., *J. Immunol. Methods* 205(2):177-190 (1997); Liautard et al., *Cytokine* 9(4):233-241 (1997); Carlson et al., *J. Biol. Chem.* 272(17):11295-11301 (1997); Taryman et al., *Neuron* 14(4):755-762 (1995); Muller et al., *Structure* 6(9):1153-1167 (1998); Bartunek et al., *Cytokine* 8(1):14-20 (1996) (which are all incorporated by reference herein in their entireties).

Antibodies of the present invention may be used, for example, but not limited to, to purify, detect, and target the polypeptides of the present invention, including both in vitro and in vivo diagnostic and therapeutic methods. For example, the antibodies have use in immunoassays for qualitatively and quantitatively measuring levels of the polypeptides of the present invention in biological samples. See, e.g., Harlow et al., *Antibodies: A Laboratory Manual*, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988) (incorporated by reference herein in its entirety).

As discussed in more detail below, the antibodies of the present invention may be used either alone or in combination with other compositions. The antibodies may further be recombinantly fused to a heterologous polypeptide at the N- or C-terminus or chemically conjugated (including covalently and non-covalently conjugations) to polypeptides or other compositions. For example, antibodies of the present invention may be recombinantly fused or conjugated to molecules useful as labels in detection assays and effector molecules such as heterologous polypeptides, drugs, radionuclides, or toxins. See, e.g., PCT publications WO 92/08495; WO 91/14438; WO 89/12624; U.S. Patent No. 5,314,995; and EP 396,387.

The antibodies of the invention include derivatives that are modified, i.e., by the covalent attachment of any type of molecule to the antibody such that covalent attachment does not prevent the antibody from generating an anti-idiotypic response. For example, but not by way of limitation, the antibody derivatives include antibodies that have been modified, e.g., by glycosylation, acetylation, pegylation, phosphorylation, amidation, derivatization by known protecting/blocking groups,

proteolytic cleavage, linkage to a cellular ligand or other protein, etc. Any of numerous chemical modifications may be carried out by known techniques, including, but not limited to specific chemical cleavage, acetylation, formylation, metabolic synthesis of tunicamycin, etc. Additionally, the derivative may contain one or more  
5 non-classical amino acids.

The antibodies of the present invention may be generated by any suitable method known in the art. Polyclonal antibodies to an antigen-of-interest can be produced by various procedures well known in the art. For example, a polypeptide of the invention can be administered to various host animals including, but not limited  
10 to, rabbits, mice, rats, etc. to induce the production of sera containing polyclonal antibodies specific for the antigen. Various adjuvants may be used to increase the immunological response, depending on the host species, and include but are not limited to, Freund's (complete and incomplete), mineral gels such as aluminum hydroxide, surface active substances such as lysolecithin, pluronic polyols,  
15 polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and corynebacterium parvum. Such adjuvants are also well known in the art.

Monoclonal antibodies can be prepared using a wide variety of techniques known in the art including the use of hybridoma, recombinant, and phage display  
20 technologies, or a combination thereof. For example, monoclonal antibodies can be produced using hybridoma techniques including those known in the art and taught, for example, in Harlow et al., *Antibodies: A Laboratory Manual*, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); Hammerling, et al., in: *Monoclonal Antibodies and T-Cell Hybridomas* 563-681 (Elsevier, N.Y., 1981) (said references incorporated by  
25 reference in their entireties). The term "monoclonal antibody" as used herein is not limited to antibodies produced through hybridoma technology. The term "monoclonal antibody" refers to an antibody that is derived from a single clone, including any eukaryotic, prokaryotic, or phage clone, and not the method by which it is produced.

Methods for producing and screening for specific antibodies using hybridoma technology are routine and well known in the art and are discussed in detail in the Examples. In a non-limiting example, mice can be immunized with a polypeptide of the invention or a cell expressing such peptide. Once an immune response is  
5 detected, e.g., antibodies specific for the antigen are detected in the mouse serum, the mouse spleen is harvested and splenocytes isolated. The splenocytes are then fused by well known techniques to any suitable myeloma cells, for example cells from cell line SP20 available from the ATCC. Hybridomas are selected and cloned by limited dilution. The hybridoma clones are then assayed by methods known in the art for  
10 cells that secrete antibodies capable of binding a polypeptide of the invention. Ascites fluid, which generally contains high levels of antibodies, can be generated by immunizing mice with positive hybridoma clones.

Accordingly, the present invention provides methods of generating monoclonal antibodies as well as antibodies produced by the method comprising  
15 culturing a hybridoma cell secreting an antibody of the invention wherein, preferably, the hybridoma is generated by fusing splenocytes isolated from a mouse immunized with an antigen of the invention with myeloma cells and then screening the hybridomas resulting from the fusion for hybridoma clones that secrete an antibody able to bind a polypeptide of the invention.

20 Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, Fab and F(ab')<sub>2</sub> fragments of the invention may be produced by proteolytic cleavage of immunoglobulin molecules, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')<sub>2</sub> fragments). F(ab')<sub>2</sub> fragments contain the variable region, the light chain constant region and the  
25 CH1 domain of the heavy chain.

For example, the antibodies of the present invention can also be generated using various phage display methods known in the art. In phage display methods, functional antibody domains are displayed on the surface of phage particles which carry the polynucleotide sequences encoding them. In a particular embodiment, such  
30 phage can be utilized to display antigen binding domains expressed from a repertoire

or combinatorial antibody library (e.g., human or murine). Phage expressing an antigen binding domain that binds the antigen of interest can be selected or identified with antigen, e.g., using labeled antigen or antigen bound or captured to a solid surface or bead. Phage used in these methods are typically filamentous phage including fd and M13 binding domains expressed from phage with Fab, Fv or 5 disulfide stabilized Fv antibody domains recombinantly fused to either the phage gene III or gene VIII protein. Examples of phage display methods that can be used to make the antibodies of the present invention include those disclosed in Brinkman et al., *J. Immunol. Methods* 182:41-50 (1995); Ames et al., *J. Immunol. Methods* 10 184:177-186 (1995); Kettleborough et al., *Eur. J. Immunol.* 24:952-958 (1994); Persic et al., *Gene* 187 9-18 (1997); Burton et al., *Advances in Immunology* 57:191-280 (1994); PCT application No. PCT/GB91/01134; PCT publications WO 90/02809; WO 91/10737; WO 92/01047; WO 92/18619; WO 93/11236; WO 95/15982; WO 95/20401; and U.S. Patent Nos. 5,698,426; 5,223,409; 5,403,484; 5,580,717; 15 5,427,908; 5,750,753; 5,821,047; 5,571,698; 5,427,908; 5,516,637; 5,780,225; 5,658,727; 5,733,743 and 5,969,108; each of which is incorporated herein by reference in its entirety.

As described in the above references, after phage selection, the antibody coding regions from the phage can be isolated and used to generate whole antibodies, 20 including human antibodies, or any other desired antigen binding fragment, and expressed in any desired host, including mammalian cells, insect cells, plant cells, yeast, and bacteria, e.g., as described in detail below. For example, techniques to recombinantly produce Fab, Fab' and F(ab')<sub>2</sub> fragments can also be employed using methods known in the art such as those disclosed in PCT publication WO 92/22324; 25 Mullinax et al., *BioTechniques* 12(6):864-869 (1992); and Sawai et al., *AJRI* 34:26-34 (1995); and Better et al., *Science* 240:1041-1043 (1988) (said references incorporated by reference in their entireties).

Examples of techniques which can be used to produce single-chain Fvs and antibodies include those described in U.S. Patents 4,946,778 and 5,258,498; Huston 30 et al., *Methods in Enzymology* 203:46-88 (1991); Shu et al., *PNAS* 90:7995-7999

(1993); and Skerra et al., Science 240:1038-1040 (1988). For some uses, including in vivo use of antibodies in humans and in vitro detection assays, it may be preferable to use chimeric, humanized, or human antibodies. A chimeric antibody is a molecule in which different portions of the antibody are derived from different animal species, such as antibodies having a variable region derived from a murine monoclonal antibody and a human immunoglobulin constant region. Methods for producing chimeric antibodies are known in the art. See e.g., Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Gillies et al., (1989) J. Immunol. Methods 125:191-202; U.S. Patent Nos. 5,807,715; 4,816,567; and 4,816,397, which are incorporated herein by reference in their entirety. Humanized antibodies are antibody molecules from non-human species antibody that binds the desired antigen having one or more complementarity determining regions (CDRs) from the non-human species and a framework regions from a human immunoglobulin molecule. Often, framework residues in the human framework regions will be substituted with the corresponding residue from the CDR donor antibody to alter, preferably improve, antigen binding. These framework substitutions are identified by methods well known in the art, e.g., by modeling of the interactions of the CDR and framework residues to identify framework residues important for antigen binding and sequence comparison to identify unusual framework residues at particular positions. (See, e.g., Queen et al., U.S. Patent No. 5,585,089; Riechmann et al., Nature 332:323 (1988), which are incorporated herein by reference in their entirety.) Antibodies can be humanized using a variety of techniques known in the art including, for example, CDR-grafting (EP 239,400; PCT publication WO 91/09967; U.S. Patent Nos. 5,225,539; 5,530,101; and 5,585,089), veneering or resurfacing (EP 592,106; EP 519,596; Padlan, Molecular Immunology 28(4/5):489-498 (1991); Studnicka et al., Protein Engineering 7(6):805-814 (1994); Roguska et al., PNAS 91:969-973 (1994)), and chain shuffling (U.S. Patent No. 5,565,332).

Completely human antibodies are particularly desirable for therapeutic treatment of human patients. Human antibodies can be made by a variety of methods known in the art including phage display methods described above using antibody



libraries derived from human immunoglobulin sequences. See also, U.S. Patent Nos. 4,444,887 and 4,716,111; and PCT publications WO 98/46645, WO 98/50433, WO 98/24893, WO 98/16654, WO 96/34096, WO 96/33735, and WO 91/10741; each of which is incorporated herein by reference in its entirety.

5 Human antibodies can also be produced using transgenic mice which are incapable of expressing functional endogenous immunoglobulins, but which can express human immunoglobulin genes. For example, the human heavy and light chain immunoglobulin gene complexes may be introduced randomly or by homologous recombination into mouse embryonic stem cells. Alternatively, the  
10 human variable region, constant region, and diversity region may be introduced into mouse embryonic stem cells in addition to the human heavy and light chain genes. The mouse heavy and light chain immunoglobulin genes may be rendered non-functional separately or simultaneously with the introduction of human immunoglobulin loci by homologous recombination. In particular, homozygous  
15 deletion of the JH region prevents endogenous antibody production. The modified embryonic stem cells are expanded and microinjected into blastocysts to produce chimeric mice. The chimeric mice are then bred to produce homozygous offspring which express human antibodies. The transgenic mice are immunized in the normal fashion with a selected antigen, e.g., all or a portion of a polypeptide of the invention.  
20 Monoclonal antibodies directed against the antigen can be obtained from the immunized, transgenic mice using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA, IgM and IgE antibodies. For an overview of this technology for producing  
25 human antibodies, see Lonberg and Huszar, *Int. Rev. Immunol.* 13:65-93 (1995). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, e.g., PCT publications WO 98/24893; WO 92/01047; WO 96/34096; WO 96/33735; European  
30 Patent No. 0 598 877; U.S. Patent Nos. 5,413,923; 5,625,126; 5,633,425; 5,569,825;

5,661,016; 5,545,806; 5,814,318; 5,885,793; 5,916,771; and 5,939,598, which are incorporated by reference herein in their entirety. In addition, companies such as Abgenix, Inc. (Freemont, CA) and Genpharm (San Jose, CA) can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, e.g., a mouse antibody, is used to guide the selection of a completely human antibody recognizing the same epitope. (Jespers et al., Bio/technology 12:899-903 (1988)).

Further, antibodies to the polypeptides of the invention can, in turn, be utilized to generate anti-idiotypic antibodies that "mimic" polypeptides of the invention using techniques well known to those skilled in the art. (See, e.g., Greenspan & Bona, FASEB J. 7(5):437-444; (1989) and Nissinoff, J. Immunol. 147(8):2429-2438 (1991)). For example, antibodies which bind to and competitively inhibit polypeptide multimerization and/or binding of a polypeptide of the invention to a ligand can be used to generate anti-idiotypes that "mimic" the polypeptide multimerization and/or binding domain and, as a consequence, bind to and neutralize polypeptide and/or its ligand. Such neutralizing anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens to neutralize polypeptide ligand. For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligands/receptors, and thereby block its biological activity.

#### *Polynucleotides Encoding Antibodies*

The invention further provides polynucleotides comprising a nucleotide sequence encoding an antibody of the invention and fragments thereof. The invention also encompasses polynucleotides that hybridize under stringent or alternatively, under lower stringency hybridization conditions, e.g., as defined supra, to polynucleotides that encode an antibody, preferably, that specifically binds to a

polypeptide of the invention, preferably, an antibody that binds to a polypeptide having the amino acid sequence of SEQ ID NO:Y.

The polynucleotides may be obtained, and the nucleotide sequence of the polynucleotides determined, by any method known in the art. For example, if the  
5 nucleotide sequence of the antibody is known, a polynucleotide encoding the antibody may be assembled from chemically synthesized oligonucleotides (e.g., as described in Kutmeier et al., *BioTechniques* 17:242 (1994)), which, briefly, involves the synthesis of overlapping oligonucleotides containing portions of the sequence encoding the antibody, annealing and ligating of those oligonucleotides, and then amplification of  
10 the ligated oligonucleotides by PCR.

Alternatively, a polynucleotide encoding an antibody may be generated from nucleic acid from a suitable source. If a clone containing a nucleic acid encoding a particular antibody is not available, but the sequence of the antibody molecule is known, a nucleic acid encoding the immunoglobulin may be chemically synthesized  
15 or obtained from a suitable source (e.g., an antibody cDNA library, or a cDNA library generated from, or nucleic acid, preferably poly A+ RNA, isolated from, any tissue or cells expressing the antibody, such as hybridoma cells selected to express an antibody of the invention) by PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the sequence or by cloning using an oligonucleotide probe  
20 specific for the particular gene sequence to identify, e.g., a cDNA clone from a cDNA library that encodes the antibody. Amplified nucleic acids generated by PCR may then be cloned into replicable cloning vectors using any method well known in the art.

Once the nucleotide sequence and corresponding amino acid sequence of the  
25 antibody is determined, the nucleotide sequence of the antibody may be manipulated using methods well known in the art for the manipulation of nucleotide sequences, e.g., recombinant DNA techniques, site directed mutagenesis, PCR, etc. (see, for example, the techniques described in Sambrook et al., 1990, *Molecular Cloning, A Laboratory Manual*, 2d Ed., Cold Spring Harbor Laboratory, Cold Spring Harbor, NY  
30 and Ausubel et al., eds., 1998, *Current Protocols in Molecular Biology*, John Wiley &

Sons, NY, which are both incorporated by reference herein in their entireties ), to generate antibodies having a different amino acid sequence. for example to create amino acid substitutions, deletions, and/or insertions.

In a specific embodiment, the amino acid sequence of the heavy and/or light  
5 chain variable domains may be inspected to identify the sequences of the complementarity determining regions (CDRs) by methods that are well know in the art, e.g., by comparison to known amino acid sequences of other heavy and light chain variable regions to determine the regions of sequence hypervariability. Using routine recombinant DNA techniques, one or more of the CDRs may be inserted  
10 within framework regions, e.g., into human framework regions to humanize a non-human antibody, as described supra. The framework regions may be naturally occurring or consensus framework regions, and preferably human framework regions (see, e.g., Chothia et al., J. Mol. Biol. 278: 457-479 (1998) for a listing of human framework regions). Preferably, the polynucleotide generated by the combination of  
15 the framework regions and CDRs encodes an antibody that specifically binds a polypeptide of the invention. Preferably, as discussed supra, one or more amino acid substitutions may be made within the framework regions, and, preferably, the amino acid substitutions improve binding of the antibody to its antigen. Additionally, such methods may be used to make amino acid substitutions or deletions of one or more  
20 variable region cysteine residues participating in an intrachain disulfide bond to generate antibody molecules lacking one or more intrachain disulfide bonds. Other alterations to the polynucleotide are encompassed by the present invention and within the skill of the art.

In addition, techniques developed for the production of "chimeric antibodies"  
25 (Morrison et al., Proc. Natl. Acad. Sci. 81:851-855 (1984); Neuberger et al., Nature 312:604-608 (1984); Takeda et al., Nature 314:452-454 (1985)) by splicing genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. As described supra, a chimeric antibody is a molecule in which different portions are  
30 derived from different animal species, such as those having a variable region derived

from a murine mAb and a human immunoglobulin constant region, e.g., humanized antibodies.

Alternatively, techniques described for the production of single chain antibodies (U.S. Patent No. 4,946,778; Bird, Science 242:423- 42 (1988); Huston et al., Proc. Natl. Acad. Sci. USA 85:5879-5883 (1988); and Ward et al., Nature 334:544-54 (1989)) can be adapted to produce single chain antibodies. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide. Techniques for the assembly of functional Fv fragments in E. coli may also be used (Skerra et al.,  
10 Science 242:1038- 1041 (1988)).

#### *Methods of Producing Antibodies*

The antibodies of the invention can be produced by any method known in the art for the synthesis of antibodies, in particular, by chemical synthesis or preferably,  
15 by recombinant expression techniques.

Recombinant expression of an antibody of the invention, or fragment, derivative or analog thereof, (e.g., a heavy or light chain of an antibody of the invention or a single chain antibody of the invention), requires construction of an expression vector containing a polynucleotide that encodes the antibody. Once a  
20 polynucleotide encoding an antibody molecule or a heavy or light chain of an antibody, or portion thereof (preferably containing the heavy or light chain variable domain), of the invention has been obtained, the vector for the production of the antibody molecule may be produced by recombinant DNA technology using techniques well known in the art. Thus, methods for preparing a protein by  
25 expressing a polynucleotide containing an antibody encoding nucleotide sequence are described herein. Methods which are well known to those skilled in the art can be used to construct expression vectors containing antibody coding sequences and appropriate transcriptional and translational control signals. These methods include, for example, in vitro recombinant DNA techniques, synthetic techniques, and in vivo  
30 genetic recombination. The invention, thus, provides replicable vectors comprising a

nucleotide sequence encoding an antibody molecule of the invention, or a heavy or light chain thereof, or a heavy or light chain variable domain, operably linked to a promoter. Such vectors may include the nucleotide sequence encoding the constant region of the antibody molecule (see, e.g., PCT Publication WO 86/05807; PCT  
5 Publication WO 89/01036; and U.S. Patent No. 5,122,464) and the variable domain of the antibody may be cloned into such a vector for expression of the entire heavy or light chain.

The expression vector is transferred to a host cell by conventional techniques and the transfected cells are then cultured by conventional techniques to produce an  
10 antibody of the invention. Thus, the invention includes host cells containing a polynucleotide encoding an antibody of the invention, or a heavy or light chain thereof, or a single chain antibody of the invention, operably linked to a heterologous promoter. In preferred embodiments for the expression of double-chained antibodies, vectors encoding both the heavy and light chains may be co-expressed in the host cell  
15 for expression of the entire immunoglobulin molecule, as detailed below.

A variety of host-expression vector systems may be utilized to express the antibody molecules of the invention. Such host-expression systems represent vehicles by which the coding sequences of interest may be produced and subsequently purified, but also represent cells which may, when transformed or transfected with  
20 the appropriate nucleotide coding sequences, express an antibody molecule of the invention in situ. These include but are not limited to microorganisms such as bacteria (e.g., *E. coli*, *B. subtilis*) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing antibody coding sequences; yeast (e.g., *Saccharomyces*, *Pichia*) transformed with recombinant yeast  
25 expression vectors containing antibody coding sequences; insect cell systems infected with recombinant virus expression vectors (e.g., baculovirus) containing antibody coding sequences; plant cell systems infected with recombinant virus expression vectors (e.g., cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (e.g., Ti plasmid)  
30 containing antibody coding sequences; or mammalian cell systems (e.g., COS, CHO,

BHK, 293, 3T3 cells) harboring recombinant expression constructs containing promoters derived from the genome of mammalian cells (e.g., metallothionein promoter) or from mammalian viruses (e.g., the adenovirus late promoter; the vaccinia virus 7.5K promoter). Preferably, bacterial cells such as *Escherichia coli*,  
5 and more preferably, eukaryotic cells, especially for the expression of whole recombinant antibody molecule, are used for the expression of a recombinant antibody molecule. For example, mammalian cells such as Chinese hamster ovary cells (CHO), in conjunction with a vector such as the major intermediate early gene promoter element from human cytomegalovirus is an effective expression system for  
10 antibodies (Foecking et al., *Gene* 45:101 (1986); Cockett et al., *Bio/Technology* 8:2 (1990)).

In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the antibody molecule being expressed. For example, when a large quantity of such a protein is to be produced, for the  
15 generation of pharmaceutical compositions of an antibody molecule, vectors which direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the *E. coli* expression vector pUR278 (Ruther et al., *EMBO J.* 2:1791 (1983)), in which the antibody coding sequence may be ligated individually into the vector in frame with the lac Z coding  
20 region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, *Nucleic Acids Res.* 13:3101-3109 (1985); Van Heeke & Schuster, *J. Biol. Chem.* 24:5503-5509 (1989)); and the like. pGEX vectors may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by  
25 adsorption and binding to matrix glutathione-agarose beads followed by elution in the presence of free glutathione. The pGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

In an insect system, *Autographa californica* nuclear polyhedrosis virus  
30 (AcNPV) is used as a vector to express foreign genes. The virus grows in

*Spodoptera frugiperda* cells. The antibody coding sequence may be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter).

5           In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the antibody coding sequence of interest may be ligated to an adenovirus transcription/translation control complex, e.g., the late promoter and tripartite leader sequence. This chimeric gene may then be inserted in the adenovirus genome by in vitro or in vivo  
10 recombination. Insertion in a non-essential region of the viral genome (e.g., region E1 or E3) will result in a recombinant virus that is viable and capable of expressing the antibody molecule in infected hosts. (e.g., see Logan & Shenk, Proc. Natl. Acad. Sci. USA 81:355-359 (1984)). Specific initiation signals may also be required for efficient translation of inserted antibody coding sequences. These signals include the  
15 ATG initiation codon and adjacent sequences. Furthermore, the initiation codon must be in phase with the reading frame of the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate  
20 transcription enhancer elements, transcription terminators, etc. (see Bittner et al., Methods in Enzymol. 153:51-544 (1987)).

          In addition, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Such modifications (e.g., glycosylation) and processing (e.g.,  
25 cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which  
30 possess the cellular machinery for proper processing of the primary transcript,



glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include but are not limited to CHO, VERY, BHK, Hela, COS, MDCK, 293, 3T3, WI38, and in particular, breast cancer cell lines such as, for example, BT483, Hs578T, HTB2, BT20 and T47D, and normal mammary gland cell  
5 line such as, for example, CRL7030 and Hs578Bst.

For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the antibody molecule may be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by  
10 appropriate expression control elements (e.g., promoter, enhancer, sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in the recombinant plasmid confers resistance to the selection  
15 and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the antibody molecule. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that interact directly or indirectly with the antibody molecule.

20 A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler et al., Cell 11:223 (1977)), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, Proc. Natl. Acad. Sci. USA 48:202 (1992)), and adenine phosphoribosyltransferase (Lowy et al., Cell 22:817 (1980)) genes can be employed in tk-, hgppt- or appt- cells, respectively.  
25 Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler et al., Natl. Acad. Sci. USA 77:357 (1980); O'Hare et al., Proc. Natl. Acad. Sci. USA 78:1527 (1981)); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, Proc. Natl. Acad. Sci. USA 78:2072 (1981)); neo, which confers resistance to the aminoglycoside G-  
30 418 Clinical Pharmacy 12:488-505; Wu and Wu, Biotherapy 3:87-95 (1991);

Tolstoshev, *Ann. Rev. Pharmacol. Toxicol.* 32:573-596 (1993); Mulligan, *Science* 260:926-932 (1993); and Morgan and Anderson, *Ann. Rev. Biochem.* 62:191-217 (1993); May, 1993, *TIB TECH* 11(5):155-215); and hyg<sup>r</sup>, which confers resistance to hygromycin (Santerre et al., *Gene* 30:147 (1984)). Methods commonly known in the art of recombinant DNA technology may be routinely applied to select the desired recombinant clone, and such methods are described, for example, in Ausubel et al. (eds.), *Current Protocols in Molecular Biology*, John Wiley & Sons, NY (1993); Kriegler, *Gene Transfer and Expression, A Laboratory Manual*, Stockton Press, NY (1990); and in Chapters 12 and 13, Dracopoli et al. (eds), *Current Protocols in Human Genetics*, John Wiley & Sons, NY (1994); Colberre-Garapin et al., *J. Mol. Biol.* 150:1 (1981), which are incorporated by reference herein in their entireties.

The expression levels of an antibody molecule can be increased by vector amplification (for a review, see Bebbington and Hentschel, *The use of vectors based on gene amplification for the expression of cloned genes in mammalian cells in DNA cloning*, Vol.3. (Academic Press, New York, 1987)). When a marker in the vector system expressing antibody is amplifiable, increase in the level of inhibitor present in culture of host cell will increase the number of copies of the marker gene. Since the amplified region is associated with the antibody gene, production of the antibody will also increase (Crouse et al., *Mol. Cell. Biol.* 3:257 (1983)).

The host cell may be co-transfected with two expression vectors of the invention, the first vector encoding a heavy chain derived polypeptide and the second vector encoding a light chain derived polypeptide. The two vectors may contain identical selectable markers which enable equal expression of heavy and light chain polypeptides. Alternatively, a single vector may be used which encodes, and is capable of expressing, both heavy and light chain polypeptides. In such situations, the light chain should be placed before the heavy chain to avoid an excess of toxic free heavy chain (Proudfoot, *Nature* 322:52 (1986); Kohler, *Proc. Natl. Acad. Sci. USA* 77:2197 (1980)). The coding sequences for the heavy and light chains may comprise cDNA or genomic DNA.

Once an antibody molecule of the invention has been produced by an animal, chemically synthesized, or recombinantly expressed, it may be purified by any method known in the art for purification of an immunoglobulin molecule, for example, by chromatography (e.g., ion exchange, affinity, particularly by affinity for  
5 the specific antigen after Protein A, and sizing column chromatography), centrifugation, differential solubility, or by any other standard technique for the purification of proteins. In addition, the antibodies of the present invention or fragments thereof can be fused to heterologous polypeptide sequences described herein or otherwise known in the art, to facilitate purification.

10 The present invention encompasses antibodies recombinantly fused or chemically conjugated (including both covalently and non-covalently conjugations) to a polypeptide (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention to generate fusion proteins. The fusion does not necessarily need to be direct, but may occur through  
15 linker sequences. The antibodies may be specific for antigens other than polypeptides (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention. For example, antibodies may be used to target the polypeptides of the present invention to particular cell types, either in vitro or in vivo, by fusing or conjugating the polypeptides of the present invention  
20 to antibodies specific for particular cell surface receptors. Antibodies fused or conjugated to the polypeptides of the present invention may also be used in in vitro immunoassays and purification methods using methods known in the art. See e.g., Harbor et al., supra, and PCT publication WO 93/21232; EP 439,095; Naramura et al., Immunol. Lett. 39:91-99 (1994); U.S. Patent 5,474,981; Gillies et al., PNAS  
25 89:1428-1432 (1992); Fell et al., J. Immunol. 146:2446-2452(1991), which are incorporated by reference in their entireties.

The present invention further includes compositions comprising the polypeptides of the present invention fused or conjugated to antibody domains other than the variable regions. For example, the polypeptides of the present invention may  
30 be fused or conjugated to an antibody Fc region, or portion thereof. The antibody

portion fused to a polypeptide of the present invention may comprise the constant region, hinge region, CH1 domain, CH2 domain, and CH3 domain or any combination of whole domains or portions thereof. The polypeptides may also be fused or conjugated to the above antibody portions to form multimers. For example, 5 Fc portions fused to the polypeptides of the present invention can form dimers through disulfide bonding between the Fc portions. Higher multimeric forms can be made by fusing the polypeptides to portions of IgA and IgM. Methods for fusing or conjugating the polypeptides of the present invention to antibody portions are known in the art. See, e.g., U.S. Patent Nos. 5,336,603; 5,622,929; 5,359,046; 5,349,053; 10 5,447,851; 5,112,946; EP 307,434; EP 367,166; PCT publications WO 96/04388; WO 91/06570; Ashkenazi et al., Proc. Natl. Acad. Sci. USA 88:10535-10539 (1991); Zheng et al., J. Immunol. 154:5590-5600 (1995); and Vil et al., Proc. Natl. Acad. Sci. USA 89:11337- 11341(1992) (said references incorporated by reference in their entireties).

15 As discussed, supra, the polypeptides corresponding to a polypeptide, polypeptide fragment, or a variant of SEQ ID NO:Y may be fused or conjugated to the above antibody portions to increase the in vivo half life of the polypeptides or for use in immunoassays using methods known in the art. Further, the polypeptides corresponding to SEQ ID NO:Y may be fused or conjugated to the above antibody 20 portions to facilitate purification. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. (EP 394,827; Traunecker et al., Nature 331:84-86 (1988). The polypeptides of the present invention fused or conjugated to an antibody having 25 disulfide- linked dimeric structures (due to the IgG) may also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. (Fountoulakis et al., J. Biochem. 270:3958-3964 (1995)). In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. (EP A 30 232,262). Alternatively, deleting the Fc part after the fusion protein has been

expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to  
5 identify antagonists of hIL-5. (See, Bennett et al., *J. Molecular Recognition* 8:52-58 (1995); Johanson et al., *J. Biol. Chem.* 270:9459-9471 (1995).

Moreover, the antibodies or fragments thereof of the present invention can be fused to marker sequences, such as a peptide to facilitate purification. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the  
10 tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., *Proc. Natl. Acad. Sci. USA* 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Other peptide tags useful for purification include, but are not limited to, the "HA" tag, which  
15 corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., *Cell* 37:767 (1984)) and the "flag" tag.

The present invention further encompasses antibodies or fragments thereof conjugated to a diagnostic or therapeutic agent. The antibodies can be used diagnostically to, for example, monitor the development or progression of a tumor as  
20 part of a clinical testing procedure to, e.g., determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials, radioactive materials, positron emitting metals using various positron  
25 emission tomographies, and nonradioactive paramagnetic metal ions. The detectable substance may be coupled or conjugated either directly to the antibody (or fragment thereof) or indirectly, through an intermediate (such as, for example, a linker known in the art) using techniques known in the art. See, for example, U.S. Patent No. 4,741,900 for metal ions which can be conjugated to antibodies for use as diagnostics  
30 according to the present invention. Examples of suitable enzymes include horseradish

peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine  
5 fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include <sup>125</sup>I, <sup>131</sup>I, <sup>111</sup>In or <sup>99</sup>Tc.

Further, an antibody or fragment thereof may be conjugated to a therapeutic  
10 moiety such as a cytotoxin, e.g., a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, <sup>213</sup>Bi. A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin,  
15 dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine,  
20 thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis-dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic  
25 agents (e.g., vincristine and vinblastine).

The conjugates of the invention can be used for modifying a given biological response, the therapeutic agent or drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include,  
30 for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria

toxin; a protein such as tumor necrosis factor,  $\alpha$ -interferon,  $\beta$ -interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator, an apoptotic agent, e.g., TNF- $\alpha$ , TNF- $\beta$ , AIM I (See, International Publication No. WO 97/33899), AIM II (See, International Publication No. WO 97/34911), Fas Ligand (Takahashi *et al.*, *Int. Immunol.*, 6:1567-1574 (1994)), VEGF (See, International Publication No. WO 99/23105), a thrombotic agent or an anti-angiogenic agent, e.g., angiostatin or endostatin; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

Antibodies may also be attached to solid supports, which are particularly useful for immunoassays or purification of the target antigen. Such solid supports include, but are not limited to, glass, cellulose, polyacrylamide, nylon, polystyrene, polyvinyl chloride or polypropylene.

Techniques for conjugating such therapeutic moiety to antibodies are well known, see, e.g., Arnon *et al.*, "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer Therapy", in *Monoclonal Antibodies And Cancer Therapy*, Reisfeld *et al.* (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom *et al.*, "Antibodies For Drug Delivery", in *Controlled Drug Delivery* (2nd Ed.), Robinson *et al.* (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in *Monoclonal Antibodies '84: Biological And Clinical Applications*, Pinchera *et al.* (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in *Monoclonal Antibodies For Cancer Detection And Therapy*, Baldwin *et al.* (eds.), pp. 303-16 (Academic Press 1985), and Thorpe *et al.*, "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", *Immunol. Rev.* 62:119-58 (1982).

Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980, which is incorporated herein by reference in its entirety.

An antibody, with or without a therapeutic moiety conjugated to it, administered alone or in combination with cytotoxic factor(s) and/or cytokine(s) can be used as a therapeutic.

## 5 *Immunophenotyping*

The antibodies of the invention may be utilized for immunophenotyping of cell lines and biological samples. The translation product of the gene of the present invention may be useful as a cell specific marker, or more specifically as a cellular marker that is differentially expressed at various stages of differentiation and/or  
10 maturation of particular cell types. Monoclonal antibodies directed against a specific epitope, or combination of epitopes, will allow for the screening of cellular populations expressing the marker. Various techniques can be utilized using monoclonal antibodies to screen for cellular populations expressing the marker(s), and include magnetic separation using antibody-coated magnetic beads, "panning"  
15 with antibody attached to a solid matrix (i.e., plate), and flow cytometry (See, e.g., U.S. Patent 5,985,660; and Morrison *et al.*, *Cell*, 96:737-49 (1999)).

These techniques allow for the screening of particular populations of cells, such as might be found with hematological malignancies (i.e. minimal residual disease (MRD) in acute leukemic patients) and "non-self" cells in transplantations to  
20 prevent Graft-versus-Host Disease (GVHD). Alternatively, these techniques allow for the screening of hematopoietic stem and progenitor cells capable of undergoing proliferation and/or differentiation, as might be found in human umbilical cord blood.

## *Assays For Antibody Binding*

25 The antibodies of the invention may be assayed for immunospecific binding by any method known in the art. The immunoassays which can be used include but are not limited to competitive and non-competitive assay systems using techniques such as western blots, radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoprecipitation assays, precipitin reactions,  
30 gel diffusion precipitin reactions, immunodiffusion assays, agglutination assays,



complement-fixation assays, immunoradiometric assays, fluorescent immunoassays, protein A immunoassays, to name but a few. Such assays are routine and well known in the art (see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, which is incorporated by reference herein in its entirety). Exemplary immunoassays are described briefly below (but are not intended by way of limitation).

Immunoprecipitation protocols generally comprise lysing a population of cells in a lysis buffer such as RIPA buffer (1% NP-40 or Triton X- 100, 1% sodium deoxycholate, 0.1% SDS, 0.15 M NaCl, 0.01 M sodium phosphate at pH 7.2, 1% Trasyolol) supplemented with protein phosphatase and/or protease inhibitors (e.g., EDTA, PMSF, aprotinin, sodium vanadate), adding the antibody of interest to the cell lysate, incubating for a period of time (e.g., 1-4 hours) at 4° C, adding protein A and/or protein G sepharose beads to the cell lysate, incubating for about an hour or more at 4° C, washing the beads in lysis buffer and resuspending the beads in SDS/sample buffer. The ability of the antibody of interest to immunoprecipitate a particular antigen can be assessed by, e.g., western blot analysis. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the binding of the antibody to an antigen and decrease the background (e.g., pre-clearing the cell lysate with sepharose beads). For further discussion regarding immunoprecipitation protocols see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 10.16.1.

Western blot analysis generally comprises preparing protein samples, electrophoresis of the protein samples in a polyacrylamide gel (e.g., 8%- 20% SDS-PAGE depending on the molecular weight of the antigen), transferring the protein sample from the polyacrylamide gel to a membrane such as nitrocellulose, PVDF or nylon, blocking the membrane in blocking solution (e.g., PBS with 3% BSA or non-fat milk), washing the membrane in washing buffer (e.g., PBS-Tween 20), blocking the membrane with primary antibody (the antibody of interest) diluted in blocking buffer, washing the membrane in washing buffer, blocking the membrane with a secondary antibody (which recognizes the primary antibody, e.g., an anti-human

antibody) conjugated to an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) or radioactive molecule (e.g.,  $^{32}\text{P}$  or  $^{125}\text{I}$ ) diluted in blocking buffer, washing the membrane in wash buffer, and detecting the presence of the antigen. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected and to reduce the background noise. For further discussion regarding western blot protocols see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 10.8.1.

ELISAs comprise preparing antigen, coating the well of a 96 well microtiter plate with the antigen, adding the antibody of interest conjugated to a detectable compound such as an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) to the well and incubating for a period of time, and detecting the presence of the antigen. In ELISAs the antibody of interest does not have to be conjugated to a detectable compound; instead, a second antibody (which recognizes the antibody of interest) conjugated to a detectable compound may be added to the well. Further, instead of coating the well with the antigen, the antibody may be coated to the well. In this case, a second antibody conjugated to a detectable compound may be added following the addition of the antigen of interest to the coated well. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected as well as other variations of ELISAs known in the art. For further discussion regarding ELISAs see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York at 11.2.1.

The binding affinity of an antibody to an antigen and the off-rate of an antibody-antigen interaction can be determined by competitive binding assays. One example of a competitive binding assay is a radioimmunoassay comprising the incubation of labeled antigen (e.g.,  $^3\text{H}$  or  $^{125}\text{I}$ ) with the antibody of interest in the presence of increasing amounts of unlabeled antigen, and the detection of the antibody bound to the labeled antigen. The affinity of the antibody of interest for a particular antigen and the binding off-rates can be determined from the data by

scatchard plot analysis. Competition with a second antibody can also be determined using radioimmunoassays. In this case, the antigen is incubated with antibody of interest conjugated to a labeled compound (e.g.,  $^3\text{H}$  or  $^{125}\text{I}$ ) in the presence of increasing amounts of an unlabeled second antibody.

5

### *Therapeutic Uses*

The present invention is further directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the disclosed diseases, disorders, or conditions. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions described herein. The treatment and/or prevention of diseases, disorders, or conditions associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

30

The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors (such as, e.g., IL-2, IL-3 and IL-7), for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

The antibodies of the invention may be administered alone or in combination with other types of treatments (e.g., radiation therapy, chemotherapy, hormonal therapy, immunotherapy and anti-tumor agents). Generally, administration of products of a species origin or species reactivity (in the case of antibodies) that is the same species as that of the patient is preferred. Thus, in a preferred embodiment, human antibodies, fragments derivatives, analogs, or nucleic acids, are administered to a human patient for therapy or prophylaxis.

It is preferred to use high affinity and/or potent in vivo inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides of the invention, including fragments thereof. Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-2}$  M,  $10^{-2}$  M,  $5 \times 10^{-3}$  M,  $10^{-3}$  M,  $5 \times 10^{-4}$  M,  $10^{-4}$  M,  $5 \times 10^{-5}$  M,  $10^{-5}$  M,  $5 \times 10^{-6}$  M,  $10^{-6}$  M,  $5 \times 10^{-7}$  M,  $10^{-7}$  M,  $5 \times 10^{-8}$  M,  $10^{-8}$  M,  $5 \times 10^{-9}$  M,  $10^{-9}$  M,  $5 \times 10^{-10}$  M,  $10^{-10}$  M,  $5 \times 10^{-11}$  M,  $10^{-11}$  M,  $5 \times 10^{-12}$  M,  $10^{-12}$  M,  $5 \times 10^{-13}$  M,  $10^{-13}$  M,  $5 \times 10^{-14}$  M,  $10^{-14}$  M,  $5 \times 10^{-15}$  M, and  $10^{-15}$  M.

## **Gene Therapy**

In a specific embodiment, nucleic acids comprising sequences encoding antibodies or functional derivatives thereof, are administered to treat, inhibit or prevent a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention, by way of gene therapy. Gene therapy refers to therapy performed by the administration to a subject of an expressed or expressible nucleic

acid. In this embodiment of the invention, the nucleic acids produce their encoded protein that mediates a therapeutic effect.

Any of the methods for gene therapy available in the art can be used according to the present invention. Exemplary methods are described below.

5 For general reviews of the methods of gene therapy, see Goldspiel et al., *Clinical Pharmacy* 12:488-505 (1993); Wu and Wu, *Biotherapy* 3:87-95 (1991); Tolstoshev, *Ann. Rev. Pharmacol. Toxicol.* 32:573-596 (1993); Mulligan, *Science* 260:926-932 (1993); and Morgan and Anderson, *Ann. Rev. Biochem.* 62:191-217 (1993); May, *TIBTECH* 11(5):155-215 (1993). Methods commonly known in the art  
10 of recombinant DNA technology which can be used are described in Ausubel et al. (eds.), *Current Protocols in Molecular Biology*, John Wiley & Sons, NY (1993); and Kriegler, *Gene Transfer and Expression, A Laboratory Manual*, Stockton Press, NY (1990).

In a preferred aspect, the compound comprises nucleic acid sequences  
15 encoding an antibody, said nucleic acid sequences being part of expression vectors that express the antibody or fragments or chimeric proteins or heavy or light chains thereof in a suitable host. In particular, such nucleic acid sequences have promoters operably linked to the antibody coding region, said promoter being inducible or constitutive, and, optionally, tissue-specific. In another particular embodiment,  
20 nucleic acid molecules are used in which the antibody coding sequences and any other desired sequences are flanked by regions that promote homologous recombination at a desired site in the genome, thus providing for intrachromosomal expression of the antibody encoding nucleic acids (Koller and Smithies, *Proc. Natl. Acad. Sci. USA* 86:8932-8935 (1989); Zijlstra et al., *Nature* 342:435-438 (1989). In  
25 specific embodiments, the expressed antibody molecule is a single chain antibody; alternatively, the nucleic acid sequences include sequences encoding both the heavy and light chains, or fragments thereof, of the antibody.

Delivery of the nucleic acids into a patient may be either direct, in which case the patient is directly exposed to the nucleic acid or nucleic acid- carrying vectors, or  
30 indirect, in which case, cells are first transformed with the nucleic acids in vitro, then

transplanted into the patient. These two approaches are known, respectively, as in vivo or ex vivo gene therapy.

In a specific embodiment, the nucleic acid sequences are directly administered in vivo, where it is expressed to produce the encoded product. This can be accomplished by any of numerous methods known in the art, e.g., by constructing them as part of an appropriate nucleic acid expression vector and administering it so that they become intracellular, e.g., by infection using defective or attenuated retrovirals or other viral vectors (see U.S. Patent No. 4,980,286), or by direct injection of naked DNA, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, encapsulation in liposomes, microparticles, or microcapsules, or by administering them in linkage to a peptide which is known to enter the nucleus, by administering it in linkage to a ligand subject to receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)) (which can be used to target cell types specifically expressing the receptors), etc. In another embodiment, nucleic acid-ligand complexes can be formed in which the ligand comprises a fusogenic viral peptide to disrupt endosomes, allowing the nucleic acid to avoid lysosomal degradation. In yet another embodiment, the nucleic acid can be targeted in vivo for cell specific uptake and expression, by targeting a specific receptor (see, e.g., PCT Publications WO 92/06180; WO 92/22635; WO92/20316; WO93/14188, WO 93/20221). Alternatively, the nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989)).

In a specific embodiment, viral vectors that contains nucleic acid sequences encoding an antibody of the invention are used. For example, a retroviral vector can be used (see Miller et al., Meth. Enzymol. 217:581-599 (1993)). These retroviral vectors contain the components necessary for the correct packaging of the viral genome and integration into the host cell DNA. The nucleic acid sequences encoding the antibody to be used in gene therapy are cloned into one or more vectors, which

facilitates delivery of the gene into a patient. More detail about retroviral vectors can be found in Boesen et al., *Biotherapy* 6:291-302 (1994), which describes the use of a retroviral vector to deliver the *mdr1* gene to hematopoietic stem cells in order to make the stem cells more resistant to chemotherapy. Other references illustrating the use of retroviral vectors in gene therapy are: Clowes et al., *J. Clin. Invest.* 93:644-651 (1994); Kiem et al., *Blood* 83:1467-1473 (1994); Salmons and Gunzberg, *Human Gene Therapy* 4:129-141 (1993); and Grossman and Wilson, *Curr. Opin. in Genetics and Devel.* 3:110-114 (1993).

Adenoviruses are other viral vectors that can be used in gene therapy. Adenoviruses are especially attractive vehicles for delivering genes to respiratory epithelia. Adenoviruses naturally infect respiratory epithelia where they cause a mild disease. Other targets for adenovirus-based delivery systems are liver, the central nervous system, endothelial cells, and muscle. Adenoviruses have the advantage of being capable of infecting non-dividing cells. Kozarsky and Wilson, *Current Opinion in Genetics and Development* 3:499-503 (1993) present a review of adenovirus-based gene therapy. Bout et al., *Human Gene Therapy* 5:3-10 (1994) demonstrated the use of adenovirus vectors to transfer genes to the respiratory epithelia of rhesus monkeys. Other instances of the use of adenoviruses in gene therapy can be found in Rosenfeld et al., *Science* 252:431-434 (1991); Rosenfeld et al., *Cell* 68:143-155 (1992); Mastrangeli et al., *J. Clin. Invest.* 91:225-234 (1993); PCT Publication WO94/12649; and Wang, et al., *Gene Therapy* 2:775-783 (1995). In a preferred embodiment, adenovirus vectors are used.

Adeno-associated virus (AAV) has also been proposed for use in gene therapy (Walsh et al., *Proc. Soc. Exp. Biol. Med.* 204:289-300 (1993); U.S. Patent No. 5,436,146).

Another approach to gene therapy involves transferring a gene to cells in tissue culture by such methods as electroporation, lipofection, calcium phosphate mediated transfection, or viral infection. Usually, the method of transfer includes the transfer of a selectable marker to the cells. The cells are then placed under selection

to isolate those cells that have taken up and are expressing the transferred gene. Those cells are then delivered to a patient.

In this embodiment, the nucleic acid is introduced into a cell prior to administration in vivo of the resulting recombinant cell. Such introduction can be carried out by any method known in the art, including but not limited to transfection, electroporation, microinjection, infection with a viral or bacteriophage vector containing the nucleic acid sequences, cell fusion, chromosome-mediated gene transfer, microcell-mediated gene transfer, spheroplast fusion, etc. Numerous techniques are known in the art for the introduction of foreign genes into cells (see, e.g., Loeffler and Behr, *Meth. Enzymol.* 217:599-618 (1993); Cohen et al., *Meth. Enzymol.* 217:618-644 (1993); Cline, *Pharmac. Ther.* 29:69-92m (1985) and may be used in accordance with the present invention, provided that the necessary developmental and physiological functions of the recipient cells are not disrupted. The technique should provide for the stable transfer of the nucleic acid to the cell, so that the nucleic acid is expressible by the cell and preferably heritable and expressible by its cell progeny.

The resulting recombinant cells can be delivered to a patient by various methods known in the art. Recombinant blood cells (e.g., hematopoietic stem or progenitor cells) are preferably administered intravenously. The amount of cells envisioned for use depends on the desired effect, patient state, etc., and can be determined by one skilled in the art.

Cells into which a nucleic acid can be introduced for purposes of gene therapy encompass any desired, available cell type, and include but are not limited to epithelial cells, endothelial cells, keratinocytes, fibroblasts, muscle cells, hepatocytes; blood cells such as Tlymphocytes, Blymphocytes, monocytes, macrophages, neutrophils, eosinophils, megakaryocytes, granulocytes; various stem or progenitor cells, in particular hematopoietic stem or progenitor cells, e.g., as obtained from bone marrow, umbilical cord blood, peripheral blood, fetal liver, etc.

In a preferred embodiment, the cell used for gene therapy is autologous to the patient.



In an embodiment in which recombinant cells are used in gene therapy, nucleic acid sequences encoding an antibody are introduced into the cells such that they are expressible by the cells or their progeny, and the recombinant cells are then administered in vivo for therapeutic effect. In a specific embodiment, stem or progenitor cells are used. Any stem and/or progenitor cells which can be isolated and maintained in vitro can potentially be used in accordance with this embodiment of the present invention (see e.g. PCT Publication WO 94/08598; Stemple and Anderson, Cell 71:973-985 (1992); Rheinwald, Meth. Cell Bio. 21A:229 (1980); and Pittelkow and Scott, Mayo Clinic Proc. 61:771 (1986)).

In a specific embodiment, the nucleic acid to be introduced for purposes of gene therapy comprises an inducible promoter operably linked to the coding region, such that expression of the nucleic acid is controllable by controlling the presence or absence of the appropriate inducer of transcription. Demonstration of Therapeutic or Prophylactic Activity

The compounds or pharmaceutical compositions of the invention are preferably tested in vitro, and then in vivo for the desired therapeutic or prophylactic activity, prior to use in humans. For example, in vitro assays to demonstrate the therapeutic or prophylactic utility of a compound or pharmaceutical composition include, the effect of a compound on a cell line or a patient tissue sample. The effect of the compound or composition on the cell line and/or tissue sample can be determined utilizing techniques known to those of skill in the art including, but not limited to, rosette formation assays and cell lysis assays. In accordance with the invention, in vitro assays which can be used to determine whether administration of a specific compound is indicated, include in vitro cell culture assays in which a patient tissue sample is grown in culture, and exposed to or otherwise administered a compound, and the effect of such compound upon the tissue sample is observed.

#### ***Therapeutic/Prophylactic Administration and Composition***

The invention provides methods of treatment, inhibition and prophylaxis by administration to a subject of an effective amount of a compound or pharmaceutical

composition of the invention, preferably a polypeptide or antibody of the invention. In a preferred aspect, the compound is substantially purified (e.g., substantially free from substances that limit its effect or produce undesired side-effects). The subject is preferably an animal, including but not limited to animals such as cows, pigs, horses,  
5 chickens, cats, dogs, etc., and is preferably a mammal, and most preferably human.

Formulations and methods of administration that can be employed when the compound comprises a nucleic acid or an immunoglobulin are described above; additional appropriate formulations and routes of administration can be selected from among those described herein below.

10 Various delivery systems are known and can be used to administer a compound of the invention, e.g., encapsulation in liposomes, microparticles, microcapsules, recombinant cells capable of expressing the compound, receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)),  
15 construction of a nucleic acid as part of a retroviral or other vector, etc. Methods of introduction include but are not limited to intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, and oral routes. The compounds or compositions may be administered by any convenient route, for example by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral mucosa, rectal and intestinal mucosa, etc.) and may be administered together  
20 with other biologically active agents. Administration can be systemic or local. In addition, it may be desirable to introduce the pharmaceutical compounds or compositions of the invention into the central nervous system by any suitable route, including intraventricular and intrathecal injection; intraventricular injection may be facilitated by an intraventricular catheter, for example, attached to a reservoir, such  
25 as an Ommaya reservoir. Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent.

In a specific embodiment, it may be desirable to administer the pharmaceutical compounds or compositions of the invention locally to the area in need of treatment; this may be achieved by, for example, and not by way of limitation, local infusion  
30 during surgery, topical application, e.g., in conjunction with a wound dressing after

surgery, by injection, by means of a catheter, by means of a suppository, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers. Preferably, when administering a protein, including an antibody, of the invention, care must be taken  
5 to use materials to which the protein does not absorb.

In another embodiment, the compound or composition can be delivered in a vesicle, in particular a liposome (see Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 353- 365 (1989); Lopez-Berestein, *ibid.*, pp.  
10 317-327; see generally *ibid.*)

In yet another embodiment, the compound or composition can be delivered in a controlled release system. In one embodiment, a pump may be used (see Langer, *supra*; Sefton, *CRC Crit. Ref. Biomed. Eng.* 14:201 (1987); Buchwald et al., *Surgery* 88:507 (1980); Saudek et al., *N. Engl. J. Med.* 321:574 (1989)). In another  
15 embodiment, polymeric materials can be used (see *Medical Applications of Controlled Release*, Langer and Wise (eds.), CRC Pres., Boca Raton, Florida (1974); *Controlled Drug Bioavailability, Drug Product Design and Performance*, Smolen and Ball (eds.), Wiley, New York (1984); Ranger and Peppas, J., *Macromol. Sci. Rev. Macromol. Chem.* 23:61 (1983); see also Levy et al., *Science* 228:190 (1985); During  
20 et al., *Ann. Neurol.* 25:351 (1989); Howard et al., *J. Neurosurg.* 71:105 (1989)). In yet another embodiment, a controlled release system can be placed in proximity of the therapeutic target, i.e., the brain, thus requiring only a fraction of the systemic dose (see, e.g., Goodson, in *Medical Applications of Controlled Release*, *supra*, vol. 2, pp. 115-138 (1984)).

25 Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

In a specific embodiment where the compound of the invention is a nucleic acid encoding a protein, the nucleic acid can be administered *in vivo* to promote expression of its encoded protein, by constructing it as part of an appropriate nucleic  
30 acid expression vector and administering it so that it becomes intracellular, e.g., by

use of a retroviral vector (see U.S. Patent No. 4,980,286), or by direct injection, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, or by administering it in linkage to a homeobox-like peptide which is known to enter the nucleus (see e.g.,  
5 Joliot et al., Proc. Natl. Acad. Sci. USA 88:1864-1868 (1991)), etc. Alternatively, a nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination.

The present invention also provides pharmaceutical compositions. Such compositions comprise a therapeutically effective amount of a compound, and a  
10 pharmaceutically acceptable carrier. In a specific embodiment, the term "pharmaceutically acceptable" means approved by a regulatory agency of the Federal or a state government or listed in the U.S. Pharmacopeia or other generally recognized pharmacopeia for use in animals, and more particularly in humans. The term "carrier" refers to a diluent, adjuvant, excipient, or vehicle with which the  
15 therapeutic is administered. Such pharmaceutical carriers can be sterile liquids, such as water and oils, including those of petroleum, animal, vegetable or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. Water is a preferred carrier when the pharmaceutical composition is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as  
20 liquid carriers, particularly for injectable solutions. Suitable pharmaceutical excipients include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride, dried skim milk, glycerol, propylene glycol, water, ethanol and the like. The composition, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH  
25 buffering agents. These compositions can take the form of solutions, suspensions, emulsion, tablets, pills, capsules, powders, sustained-release formulations and the like. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium stearate,  
30 sodium saccharine, cellulose, magnesium carbonate, etc. Examples of suitable

pharmaceutical carriers are described in "Remington's Pharmaceutical Sciences" by E.W. Martin. Such compositions will contain a therapeutically effective amount of the compound, preferably in purified form, together with a suitable amount of carrier so as to provide the form for proper administration to the patient. The formulation should suit the mode of administration.

In a preferred embodiment, the composition is formulated in accordance with routine procedures as a pharmaceutical composition adapted for intravenous administration to human beings. Typically, compositions for intravenous administration are solutions in sterile isotonic aqueous buffer. Where necessary, the composition may also include a solubilizing agent and a local anesthetic such as lignocaine to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampoule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the composition is administered by injection, an ampoule of sterile water for injection or saline can be provided so that the ingredients may be mixed prior to administration.

The compounds of the invention can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with anions such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with cations such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

The amount of the compound of the invention which will be effective in the treatment, inhibition and prevention of a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention can be determined by standard clinical techniques. In addition, in vitro assays may optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of

the disease or disorder, and should be decided according to the judgment of the practitioner and each patient's circumstances. Effective doses may be extrapolated from dose-response curves derived from in vitro or animal model test systems.

For antibodies, the dosage administered to a patient is typically 0.1 mg/kg to 100 mg/kg of the patient's body weight. Preferably, the dosage administered to a patient is between 0.1 mg/kg and 20 mg/kg of the patient's body weight, more preferably 1 mg/kg to 10 mg/kg of the patient's body weight. Generally, human antibodies have a longer half-life within the human body than antibodies from other species due to the immune response to the foreign polypeptides. Thus, lower dosages of human antibodies and less frequent administration is often possible. Further, the dosage and frequency of administration of antibodies of the invention may be reduced by enhancing uptake and tissue penetration (e.g., into the brain) of the antibodies by modifications such as, for example, lipidation.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration.

20

### ***Diagnosis and Imaging***

Labeled antibodies, and derivatives and analogs thereof, which specifically bind to a polypeptide of interest can be used for diagnostic purposes to detect, diagnose, or monitor diseases, disorders, and/or conditions associated with the aberrant expression and/or activity of a polypeptide of the invention. The invention provides for the detection of aberrant expression of a polypeptide of interest, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level,

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whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of aberrant expression.

The invention provides a diagnostic assay for diagnosing a disorder, comprising (a) assaying the expression of the polypeptide of interest in cells or body  
5 fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of a particular disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied  
10 tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

15 Antibodies of the invention can be used to assay protein levels in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell . Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked  
20 immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine ( $^{125}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{112}\text{In}$ ), and technetium ( $^{99}\text{Tc}$ ); luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

25 One aspect of the invention is the detection and diagnosis of a disease or disorder associated with aberrant expression of a polypeptide of interest in an animal, preferably a mammal and most preferably a human. In one embodiment, diagnosis comprises: a) administering (for example, parenterally, subcutaneously, or intraperitoneally) to a subject an effective amount of a labeled molecule which  
30 specifically binds to the polypeptide of interest; b) waiting for a time interval

following the administering for permitting the labeled molecule to preferentially concentrate at sites in the subject where the polypeptide is expressed (and for unbound labeled molecule to be cleared to background level); c) determining background level; and d) detecting the labeled molecule in the subject, such that  
5 detection of labeled molecule above the background level indicates that the subject has a particular disease or disorder associated with aberrant expression of the polypeptide of interest. Background level can be determined by various methods including, comparing the amount of labeled molecule detected to a standard value previously determined for a particular system.

10 It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of <sup>99m</sup>Tc. The labeled antibody or antibody fragment will then preferentially  
15 accumulate at the location of cells which contain the specific protein. In vivo tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in Tumor Imaging: The Radiochemical Detection of Cancer, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982).

20 Depending on several variables, including the type of label used and the mode of administration, the time interval following the administration for permitting the labeled molecule to preferentially concentrate at sites in the subject and for unbound labeled molecule to be cleared to background level is 6 to 48 hours or 6 to 24 hours or 6 to 12 hours. In another embodiment the time interval following administration is 5  
25 to 20 days or 5 to 10 days.

In an embodiment, monitoring of the disease or disorder is carried out by repeating the method for diagnosing the disease or disease, for example, one month after initial diagnosis, six months after initial diagnosis, one year after initial diagnosis, etc.



Presence of the labeled molecule can be detected in the patient using methods known in the art for in vivo scanning. These methods depend upon the type of label used. Skilled artisans will be able to determine the appropriate method for detecting a particular label. Methods and devices that may be used in the diagnostic methods of the invention include, but are not limited to, computed tomography (CT), whole body scan such as position emission tomography (PET), magnetic resonance imaging (MRI), and sonography.

In a specific embodiment, the molecule is labeled with a radioisotope and is detected in the patient using a radiation responsive surgical instrument (Thurston et al., U.S. Patent No. 5,441,050). In another embodiment, the molecule is labeled with a fluorescent compound and is detected in the patient using a fluorescence responsive scanning instrument. In another embodiment, the molecule is labeled with a positron emitting metal and is detected in the patient using positron emission-tomography. In yet another embodiment, the molecule is labeled with a paramagnetic label and is detected in a patient using magnetic resonance imaging (MRI).

### *Kits*

The present invention provides kits that can be used in the above methods. In one embodiment, a kit comprises an antibody of the invention, preferably a purified antibody, in one or more containers. In a specific embodiment, the kits of the present invention contain a substantially isolated polypeptide comprising an epitope which is specifically immunoreactive with an antibody included in the kit. Preferably, the kits of the present invention further comprise a control antibody which does not react with the polypeptide of interest. In another specific embodiment, the kits of the present invention contain a means for detecting the binding of an antibody to a polypeptide of interest (e.g., the antibody may be conjugated to a detectable substrate such as a fluorescent compound, an enzymatic substrate, a radioactive compound or a luminescent compound, or a second antibody which recognizes the first antibody may be conjugated to a detectable substrate).

In another specific embodiment of the present invention, the kit is a diagnostic kit for use in screening serum containing antibodies specific against proliferative and/or cancerous polynucleotides and polypeptides. Such a kit may include a control antibody that does not react with the polypeptide of interest. Such a kit may include a substantially isolated polypeptide antigen comprising an epitope which is specifically immunoreactive with at least one anti-polypeptide antigen antibody. Further, such a kit includes means for detecting the binding of said antibody to the antigen (e.g., the antibody may be conjugated to a fluorescent compound such as fluorescein or rhodamine which can be detected by flow cytometry). In specific embodiments, the kit may include a recombinantly produced or chemically synthesized polypeptide antigen. The polypeptide antigen of the kit may also be attached to a solid support.

In a more specific embodiment the detecting means of the above-described kit includes a solid support to which said polypeptide antigen is attached. Such a kit may also include a non-attached reporter-labeled anti-human antibody. In this embodiment, binding of the antibody to the polypeptide antigen can be detected by binding of the said reporter-labeled antibody.

In an additional embodiment, the invention includes a diagnostic kit for use in screening serum containing antigens of the polypeptide of the invention. The diagnostic kit includes a substantially isolated antibody specifically immunoreactive with polypeptide or polynucleotide antigens, and means for detecting the binding of the polynucleotide or polypeptide antigen to the antibody. In one embodiment, the antibody is attached to a solid support. In a specific embodiment, the antibody may be a monoclonal antibody. The detecting means of the kit may include a second, labeled monoclonal antibody. Alternatively, or in addition, the detecting means may include a labeled, competing antigen.

In one diagnostic configuration, test serum is reacted with a solid phase reagent having a surface-bound antigen obtained by the methods of the present invention. After binding with specific antigen antibody to the reagent and removing unbound serum components by washing, the reagent is reacted with reporter-labeled anti-human antibody to bind reporter to the reagent in proportion to the amount of

bound anti-antigen antibody on the solid support. The reagent is again washed to remove unbound labeled antibody, and the amount of reporter associated with the reagent is determined. Typically, the reporter is an enzyme which is detected by incubating the solid phase in the presence of a suitable fluorometric, luminescent or colorimetric substrate (Sigma, St. Louis, MO).

The solid surface reagent in the above assay is prepared by known techniques for attaching protein material to solid support material, such as polymeric beads, dip sticks, 96-well plate or filter material. These attachment methods generally include non-specific adsorption of the protein to the support or covalent attachment of the protein, typically through a free amine group, to a chemically reactive group on the solid support, such as an activated carboxyl, hydroxyl, or aldehyde group. Alternatively, streptavidin coated plates can be used in conjunction with biotinylated antigen(s).

Thus, the invention provides an assay system or kit for carrying out this diagnostic method. The kit generally includes a support with surface-bound recombinant antigens, and a reporter-labeled anti-human antibody for detecting surface-bound anti-antigen antibody.

#### **Uses of the Polynucleotides**

Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes known techniques.

The cancer antigen polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each sequence is specifically targeted to and can hybridize with a particular location on an individual human chromosome, thus each polynucleotide of the present invention can routinely be used as a chromosome marker using techniques known in the art.

Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably at least 15 bp (e.g., 15-25 bp) from the sequences shown in SEQ ID NO:X, or the complement thereto. Primers can optionally be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to SEQ ID NO:X will yield an amplified fragment.

Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal cycler. Moreover, sublocalization of the polynucleotides can be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, preselection by hybridization to construct chromosome specific-cDNA libraries, and computer mapping techniques (See, e.g., Shuler, Trends Biotechnol 16:456-459 (1998) which is hereby incorporated by reference in its entirety).

Precise chromosomal location of the polynucleotides can also be achieved using fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides 2,000-4,000 bp are preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

For chromosome mapping, the polynucleotides can be used individually (to mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes).

Thus, the present invention also provides a method for chromosomal localization which involves (a) preparing PCR primers from the polynucleotide sequences in Table 3 and SEQ ID NO:X and (b) screening somatic cell hybrids containing individual chromosomes.

The polynucleotides of the present invention would likewise be useful for radiation hybrid mapping, HAPPY mapping, and long range restriction mapping. For a review of these techniques and others known in the art, see, e.g. Dear, "Genome Mapping: A Practical Approach," IRL Press at Oxford University Press, London  
5 (1997); Aydin, J. Mol. Med. 77:691-694 (1999); Hacia et al., Mol. Psychiatry 3:483-492 (1998); Herrick et al., Chromosome Res. 7:409-423 (1999); Hamilton et al., Methods Cell Biol. 62:265-280 (2000); and/or Ott, J. Hered. 90:68-70 (1999) each of which is hereby incorporated by reference in its entirety.

Once a polynucleotide has been mapped to a precise chromosomal location,  
10 the physical position of the polynucleotide can be used in linkage analysis. Linkage analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library).) Assuming 1 megabase mapping resolution and  
15 one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.

Thus, once coinheritance is established, differences in a polynucleotide of the invention and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as  
20 deletions or translocations, are examined in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicates that the mutation may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required  
25 to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using the polynucleotides of the invention. Any of these alterations (altered expression,

chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker.

Thus, the invention provides a method of detecting increased or decreased expression levels of the cancer polynucleotides in affected individuals as compared to  
5 unaffected individuals using polynucleotides of the present invention and techniques known in the art, including but not limited to the method described in Example 11. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker.

Thus, the invention also provides a diagnostic method useful during diagnosis  
10 of a tissue specific disorder, including cancer, involving measuring the expression level of cancer polynucleotides in tissues or other cells or body fluid from an individual and comparing the measured gene expression level with a standard cancer polynucleotide expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of a tissue specific disorder.

15 In still another embodiment, the invention includes a kit for analyzing samples for the presence of proliferative and/or cancerous polynucleotides derived from a test subject. In a general embodiment, the kit includes at least one polynucleotide probe containing a nucleotide sequence that will specifically hybridize with a polynucleotide of the invention and a suitable container. In a specific embodiment,  
20 the kit includes two polynucleotide probes defining an internal region of the polynucleotide of the invention, where each probe has one strand containing a 31'-mer-end internal to the region. In a further embodiment, the probes may be useful as primers for polymerase chain reaction amplification.

Where a diagnosis of a tissue specific disorder, including, for example,  
25 diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed cancer polynucleotide expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

By "measuring the expression level of cancer polynucleotides" is intended qualitatively or quantitatively measuring or estimating the level of the cancer polypeptide or the level of the mRNA encoding the cancer polypeptide in a first biological sample either directly (e.g., by determining or estimating absolute protein  
5 level or mRNA level) or relatively (e.g., by comparing to the cancer polypeptide level or mRNA level in a second biological sample). Preferably, the cancer polypeptide level or mRNA level in the first biological sample is measured or estimated and compared to a standard cancer polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the  
10 tissue specific disorder or being determined by averaging levels from a population of individuals not having the tissue specific disorder. As will be appreciated in the art, once a standard cancer polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

By "biological sample" is intended any biological sample obtained from an  
15 individual, body fluid, cell line, tissue culture, or other source which contains a cancer polypeptide or the corresponding mRNA. As indicated, biological samples include body fluids (such as sputum, breast milk, vaginal pool, bile, semen, lymph, sera, plasma, urine, synovial fluid and spinal fluid) which contain the cancer polypeptide, and other tissue sources found to express the cancer polypeptide. Methods for  
20 obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

The method(s) provided above may preferably be applied in a diagnostic method and/or kits in which polynucleotides and/or polypeptides of the invention are  
25 attached to a solid support. In one exemplary method, the support may be a "gene chip" or a "biological chip" as described in US Patents 5,837,832, 5,874,219, and 5,856,174. Further, such a gene chip with cancer antigen polynucleotides attached may be used to identify polymorphisms between the cancer antigen polynucleotide sequences, with polynucleotides isolated from a test subject. The knowledge of such  
30 polymorphisms (i.e. their location, as well as, their existence) would be beneficial in

identifying disease loci for many disorders, such as for example, in neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. Such a method is described in  
5 US Patents 5,858,659 and 5,856,104. The US Patents referenced supra are hereby incorporated by reference in their entirety herein.

The present invention encompasses cancer polynucleotides that are chemically synthesized, or reproduced as peptide nucleic acids (PNA), or according to other methods known in the art. The use of PNAs would serve as the preferred form if the  
10 polynucleotides of the invention are incorporated onto a solid support, or gene chip. For the purposes of the present invention, a peptide nucleic acid (PNA) is a polyamide type of DNA analog and the monomeric units for adenine, guanine, thymine and cytosine are available commercially (Perceptive Biosystems). Certain components of DNA, such as phosphorus, phosphorus oxides, or deoxyribose  
15 derivatives, are not present in PNAs. As disclosed by P. E. Nielsen, M. Egholm, R. H. Berg and O. Buchardt, Science 254, 1497 (1991); and M. Egholm, O. Buchardt, L. Christensen, C. Behrens, S. M. Freier, D. A. Driver, R. H. Berg, S. K. Kim, B. Norden, and P. E. Nielsen, Nature 365, 666 (1993), PNAs bind specifically and tightly to complementary DNA strands and are not degraded by nucleases. In fact,  
20 PNA binds more strongly to DNA than DNA itself does. This is probably because there is no electrostatic repulsion between the two strands, and also the polyamide backbone is more flexible. Because of this, PNA/DNA duplexes bind under a wider range of stringency conditions than DNA/DNA duplexes, making it easier to perform multiplex hybridization. Smaller probes can be used than with DNA due to the strong  
25 binding. In addition, it is more likely that single base mismatches can be determined with PNA/DNA hybridization because a single mismatch in a PNA/DNA 15-mer lowers the melting point ( $T_{sub.m}$ ) by 8°-20° C, vs. 4°-16° C for the DNA/DNA 15-mer duplex. Also, the absence of charge groups in PNA means that hybridization can be done at low ionic strengths and reduce possible interference by salt during the  
30 analysis.



The present invention have uses which include, but are not limited to, detecting cancer in mammals. In particular the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: acute myelogenous leukemias including acute monocytic leukemia, acute myeloblastic leukemia, acute promyelocytic leukemia, acute myelomonocytic leukemia, acute erythroleukemia, acute megakaryocytic leukemia, and acute undifferentiated leukemia, etc.; and chronic myelogenous leukemias including chronic myelomonocytic leukemia, chronic granulocytic leukemia, etc. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

Pathological cell proliferative disorders are often associated with inappropriate activation of proto-oncogenes. (Germann, E. P. et al., "The Etiology of Acute Leukemia: Molecular Genetics and Viral Oncology," in *Neoplastic Diseases of the Blood*, Vol 1., Wiernik, P. H. et al. eds., 161-182 (1985)). Neoplasias are now believed to result from the qualitative alteration of a normal cellular gene product, or from the quantitative modification of gene expression by insertion into the chromosome of a viral sequence, by chromosomal translocation of a gene to a more actively transcribed region, or by some other mechanism. (Germann et al., *supra*) It is likely that mutated or altered expression of specific genes is involved in the pathogenesis of some leukemias, among other tissues and cell types. (Germann et al., *supra*) Indeed, the human counterparts of the oncogenes involved in some animal neoplasias have been amplified or translocated in some cases of human leukemia and carcinoma. (Germann et al., *supra*)

For example, c-myc expression is highly amplified in the non-lymphocytic leukemia cell line HL-60. When HL-60 cells are chemically induced to stop proliferation, the level of c-myc is found to be downregulated. (International Publication Number WO 91/15580). However, it has been shown that exposure of HL-60 cells to a DNA construct that is complementary to the 5' end of c-myc or c-myb blocks translation of the corresponding mRNAs which downregulates expression of the c-myc or c-myb proteins and causes arrest of cell proliferation and

differentiation of the treated cells. (International Publication Number WO 91/15580; Wickstrom et al., Proc. Natl. Acad. Sci. 85:1028 (1988); Anfossi et al., Proc. Natl. Acad. Sci. 86:3379 (1989)). However, the skilled artisan would appreciate the present invention's usefulness is not limited to treatment of proliferative disorders of  
5 hematopoietic cells and tissues, in light of the numerous cells and cell types of varying origins which are known to exhibit proliferative phenotypes.

In addition to the foregoing, a cancer antigen polynucleotide can be used to control gene expression through triple helix formation or through antisense DNA or RNA. Antisense techniques are discussed, for example, in Okano, J. Neurochem. 56:  
10 560 (1991); "Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance Lee et al., Nucleic Acids Research 6: 3073 (1979); Cooney et al., Science 241: 456 (1988); and Dervan et al., Science 251: 1360 (1991). Both methods rely on binding of the polynucleotide to a complementary DNA or RNA. For these  
15 techniques, preferred polynucleotides are usually oligonucleotides 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et al., Nucl. Acids Res. 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1360 (1991) ) or to the mRNA itself (antisense - Okano, J. Neurochem. 56:560 (1991); Oligodeoxy-nucleotides as  
20 Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988).) Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. The oligonucleotide described above can also be delivered to cells such that the antisense RNA or DNA may be expressed in vivo to inhibit production of  
25 polypeptide of the present invention antigens. Both techniques are effective in model systems, and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease, and in particular, for the treatment of proliferative diseases and/or conditions.

Polynucleotides of the present invention are also useful in gene therapy. One  
30 goal of gene therapy is to insert a normal gene into an organism having a defective

gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the present invention offer a means of targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell.

5       The polynucleotides are also useful for identifying individuals from minute biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for  
10 identifying personnel. This method does not suffer from the current limitations of "Dog Tags" which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for RFLP.

      The polynucleotides of the present invention can also be used as an alternative  
15 to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified because each individual will have a unique set of DNA sequences. Once an unique ID database is established for an  
20 individual, positive identification of that individual, living or dead, can be made from extremely small tissue samples.

      Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues, e.g., hair or skin, or body fluids, e.g., blood, saliva, semen,  
25 synovial fluid, amniotic fluid, breast milk, lymph, pulmonary sputum or surfactant, urine, fecal matter, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erlich, H., PCR Technology, Freeman and Co. (1992).) Once these specific polymorphic loci are amplified, they are  
30 digested with one or more restriction enzymes, yielding an identifying set of bands on

a Southern blot probed with DNA corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the present invention can be used as polymorphic markers for forensic purposes.

There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin. Appropriate reagents can comprise, for example, DNA probes or primers specific to cancer polynucleotides prepared from the sequences of the present invention. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination.

The polynucleotides of the present invention are also useful as hybridization probes for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In addition, for a number of disorders of the above tissues or cells, significantly higher or lower levels of gene expression of the polynucleotides/polypeptides of the present invention may be detected in certain tissues (e.g., tissues expressing polypeptides and/or polynucleotides of the present invention, cancer tissues and/or cancerous and/or wounded tissues) or bodily fluids (e.g., semen, vaginal pool, breast milk, bile, lymph, serum, plasma, urine, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, i.e., the expression level in healthy tissue from an individual not having the disorder.

Thus, the invention provides a diagnostic method of a disorder, which involves: (a) assaying gene expression level in cells or body fluid of an individual; (b) comparing the gene expression level with a standard gene expression level, whereby an increase or decrease in the assayed gene expression level compared to the standard expression level is indicative of a disorder.

In the very least, the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support, to raise anti-DNA antibodies using DNA immunization techniques, and as an antigen to elicit an immune response.

### Uses of the Polypeptides

Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

Polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays such as, for example, ABC immunoperoxidase (Hsu et al., J. Histochem. Cytochem. 29:577-580 (1981)) or cell type(s) (e.g., immunocytochemistry assays).

Antibodies can be used to assay levels of polypeptides encoded by polynucleotides of the invention in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine ( $^{131}\text{I}$ ,  $^{125}\text{I}$ ,  $^{123}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{115\text{m}}\text{In}$ ,  $^{113\text{m}}\text{In}$ ,  $^{112}\text{In}$ ,  $^{111}\text{In}$ ), and technetium ( $^{99}\text{Tc}$ ,  $^{99\text{m}}\text{Tc}$ ), thallium ( $^{201}\text{Tl}$ ), gallium ( $^{68}\text{Ga}$ ,  $^{67}\text{Ga}$ ), palladium ( $^{103}\text{Pd}$ ), molybdenum ( $^{99}\text{Mo}$ ), xenon ( $^{133}\text{Xe}$ ), fluorine ( $^{18}\text{F}$ ),  $^{153}\text{Sm}$ ,  $^{177}\text{Lu}$ ,  $^{159}\text{Gd}$ ,  $^{149}\text{Pm}$ ,  $^{140}\text{La}$ ,  $^{175}\text{Yb}$ ,  $^{166}\text{Ho}$ ,  $^{90}\text{Y}$ ,  $^{47}\text{Sc}$ ,  $^{186}\text{Re}$ ,  $^{188}\text{Re}$ ,  $^{142}\text{Pr}$ ,  $^{105}\text{Rh}$ ,  $^{97}\text{Ru}$ ; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

In addition to assaying levels of polypeptide of the present invention in a biological sample, proteins can also be detected in vivo by imaging. Antibody labels or markers for in vivo imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

A protein-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example,  $^{131}\text{I}$ ,  $^{112}\text{In}$ ,  $^{99\text{m}}\text{Tc}$ , ( $^{131}\text{I}$ ,  $^{125}\text{I}$ ,  $^{123}\text{I}$ ,  $^{121}\text{I}$ ), carbon ( $^{14}\text{C}$ ), sulfur ( $^{35}\text{S}$ ), tritium ( $^3\text{H}$ ), indium ( $^{115\text{m}}\text{In}$ ,  $^{113\text{m}}\text{In}$ ,  $^{112}\text{In}$ ,  $^{111}\text{In}$ ), and technetium ( $^{99}\text{Tc}$ ,  $^{99\text{m}}\text{Tc}$ ), thallium ( $^{201}\text{Ti}$ ), gallium ( $^{68}\text{Ga}$ ,  $^{67}\text{Ga}$ ), palladium ( $^{103}\text{Pd}$ ), molybdenum ( $^{99}\text{Mo}$ ), xenon ( $^{133}\text{Xe}$ ), fluorine ( $^{18}\text{F}$ ,  $^{153}\text{Sm}$ ,  $^{177}\text{Lu}$ ,  $^{159}\text{Gd}$ ,  $^{149}\text{Pm}$ ,  $^{140}\text{La}$ ,  $^{175}\text{Yb}$ ,  $^{166}\text{Ho}$ ,  $^{90}\text{Y}$ ,  $^{47}\text{Sc}$ ,  $^{186}\text{Re}$ ,  $^{188}\text{Re}$ ,  $^{142}\text{Pr}$ ,  $^{105}\text{Rh}$ ,  $^{97}\text{Ru}$ ), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for immune system disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of  $^{99\text{m}}\text{Tc}$ . The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which express the polypeptide encoded by a polynucleotide of the invention. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or

antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate  
5 episomally and that can be transcribed) into the targeted cell.

In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

10 By "toxin" is meant one or more compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not  
15 limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin.  
20 "Toxin" also includes a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example,  $^{213}\text{Bi}$ , or other radioisotopes such as, for example,  $^{103}\text{Pd}$ ,  $^{133}\text{Xe}$ ,  $^{131}\text{I}$ ,  $^{68}\text{Ge}$ ,  $^{57}\text{Co}$ ,  $^{65}\text{Zn}$ ,  $^{85}\text{Sr}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ ,  $^{90}\text{Y}$ ,  $^{153}\text{Sm}$ ,  $^{153}\text{Gd}$ ,  $^{169}\text{Yb}$ ,  $^{51}\text{Cr}$ ,  $^{54}\text{Mn}$ ,  $^{75}\text{Se}$ ,  $^{113}\text{Sn}$ ,  $^{90}\text{Yttrium}$ ,  $^{117}\text{Tin}$ ,  $^{186}\text{Rhenium}$ ,  $^{166}\text{Holmium}$ , and  $^{188}\text{Rhenium}$ ; luminescent labels, such as luminol; and fluorescent  
25 labels, such as fluorescein and rhodamine, and biotin.

Techniques known in the art may be applied to label polypeptides of the invention (including antibodies). Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139;

5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety).

Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression level of a cancer polypeptide of the present invention in cells or body fluid of an individual; and (b) comparing the assayed polypeptide expression level with a standard polypeptide expression level, whereby an increase or decrease in the assayed polypeptide expression level compared to the standard expression level is indicative of a disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

Moreover, cancer antigen polypeptides of the present invention can be used to treat or prevent diseases or conditions such as, for example, neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. For example, patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B, SOD, catalase, DNA repair proteins), to inhibit the activity of a polypeptide (e.g., an oncogene or tumor suppressor), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth inhibition, enhancement of the immune response to proliferative cells or tissues).

Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease (as described supra, and elsewhere herein). For example,



administration of an antibody directed to a polypeptide of the present invention can bind, and/or neutralize the polypeptide, and/or reduce overproduction of the polypeptide. Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

5           At the very least, the polypeptides of the present invention can be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover,  
10           the polypeptides of the present invention can be used to test the following biological activities.

#### **Gene Therapy Methods**

          Another aspect of the present invention is to gene therapy methods for treating  
15           or preventing disorders, diseases and conditions. The gene therapy methods relate to the introduction of nucleic acid (DNA, RNA and antisense DNA or RNA) sequences into an animal to achieve expression of the polypeptide of the present invention. This method requires a polynucleotide which codes for a polypeptide of the present invention operatively linked to a promoter and any other genetic elements necessary  
20           for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques are known in the art, see, for example, WO90/11092, which is herein incorporated by reference.

          Thus, for example, cells from a patient may be engineered with a polynucleotide (DNA or RNA) comprising a promoter operably linked to a  
25           polynucleotide of the present invention ex vivo, with the engineered cells then being provided to a patient to be treated with the polypeptide of the present invention. Such methods are well-known in the art. For example, see Belldgrun, A., et al., J. Natl. Cancer Inst. 85: 207-216 (1993); Ferrantini, M. et al., Cancer Research 53: 1107-1112 (1993); Ferrantini, M. et al., J. Immunology 153: 4604-4615 (1994); Kaido, T., et al.,  
30           Int. J. Cancer 60: 221-229 (1995); Ogura, H., et al., Cancer Research 50: 5102-5106

(1990); Santodonato, L., et al., Human Gene Therapy 7:1-10 (1996); Santodonato, L., et al., Gene Therapy 4:1246-1255 (1997); and Zhang, J.-F. et al., Cancer Gene Therapy 3: 31-38 (1996)), which are herein incorporated by reference. In one embodiment, the cells which are engineered are arterial cells. The arterial cells may  
5 be reintroduced into the patient through direct injection to the artery, the tissues surrounding the artery, or through catheter injection.

As discussed in more detail below, the polynucleotide constructs can be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver,  
10 and the like). The polynucleotide constructs may be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

In one embodiment, the polynucleotide of the present invention is delivered as a naked polynucleotide. The term "naked" polynucleotide, DNA or RNA refers to sequences that are free from any delivery vehicle that acts to assist, promote or  
15 facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotide of the present invention can also be delivered in liposome formulations and lipofectin formulations and the like can be prepared by methods well known to those skilled in the art. Such methods are described, for example, in  
20 U.S. Patent Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Appropriate vectors include pWLNEO,  
25 pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; pSVK3, pBPV, pMSG and pSVL available from Pharmacia; and pEF1/V5, pcDNA3.1, and pRc/CMV2 available from Invitrogen. Other suitable vectors will be readily apparent to the skilled artisan.

Any strong promoter known to those skilled in the art can be used for driving  
30 the expression of the polynucleotide sequence. Suitable promoters include adenoviral

promoters, such as the adenoviral major late promoter; or heterologous promoters, such as the cytomegalovirus (CMV) promoter; the respiratory syncytial virus (RSV) promoter; inducible promoters, such as the MMT promoter, the metallothionein promoter; heat shock promoters; the albumin promoter; the ApoA1 promoter; human  
5 globin promoters; viral thymidine kinase promoters, such as the Herpes Simplex thymidine kinase promoter; retroviral LTRs; the b-actin promoter; and human growth hormone promoters. The promoter also may be the native promoter for the polynucleotide of the present invention.

Unlike other gene therapy techniques, one major advantage of introducing  
10 naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues  
15 within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular, fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in  
20 the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the  
25 tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. In vivo muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked nucleic acid sequence injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 mg/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration.

The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked DNA constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The naked polynucleotides are delivered by any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, and so-called "gene guns". These delivery methods are known in the art.

The constructs may also be delivered with delivery vehicles such as viral sequences, viral particles, liposome formulations, lipofectin, precipitating agents, etc. Such methods of delivery are known in the art.

In certain embodiments, the polynucleotide constructs are complexed in a liposome preparation. Liposomal preparations for use in the instant invention include cationic (positively charged), anionic (negatively charged) and neutral preparations. However, cationic liposomes are particularly preferred because a tight charge complex can be formed between the cationic liposome and the polyanionic nucleic acid. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference); mRNA (Malone et al., Proc. Natl. Acad. Sci. USA (1989) 86:6077-6081, which is herein incorporated by reference); and purified

transcription factors (Debs et al., J. Biol. Chem. (1990) 265:10189-10192, which is herein incorporated by reference), in functional form.

Cationic liposomes are readily available. For example, N[1-2,3-dioleoyloxy)propyl]-N,N,N-triethylammonium (DOTMA) liposomes are particularly useful and are available under the trademark Lipofectin, from GIBCO  
5 BRL, Grand Island, N.Y. (See, also, Felgner et al., Proc. Natl Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer).

10 Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g. PCT Publication No. WO 90/11092 (which is herein incorporated by reference) for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes. Preparation of DOTMA liposomes is explained in the literature, see, e.g., P. Felgner et al., Proc.  
15 Natl. Acad. Sci. USA 84:7413-7417, which is herein incorporated by reference. Similar methods can be used to prepare liposomes from other cationic lipid materials.

Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, Ala.), or can be easily prepared using readily available materials. Such materials include phosphatidyl, choline, cholesterol,  
20 phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphosphatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

25 For example, commercially dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), and dioleoylphosphatidyl ethanolamine (DOPE) can be used in various combinations to make conventional liposomes, with or without the addition of cholesterol. Thus, for example, DOPG/DOPC vesicles can be prepared by drying 50 mg each of DOPG and DOPC under a stream of nitrogen  
30 gas into a sonication vial. The sample is placed under a vacuum pump overnight and

is hydrated the following day with deionized water. The sample is then sonicated for 2 hours in a capped vial, using a Heat Systems model 350 sonicator equipped with an inverted cup (bath type) probe at the maximum setting while the bath is circulated at 15EC. Alternatively, negatively charged vesicles can be prepared without sonication  
5 to produce multilamellar vesicles or by extrusion through nucleopore membranes to produce unilamellar vesicles of discrete size. Other methods are known and available to those of skill in the art.

The liposomes can comprise multilamellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs), with SUVs being preferred.  
10 The various liposome-nucleic acid complexes are prepared using methods well known in the art. See, e.g., Straubinger et al., *Methods of Immunology* (1983), 101:512-527, which is herein incorporated by reference. For example, MLVs containing nucleic acid can be prepared by depositing a thin film of phospholipid on the walls of a glass tube and subsequently hydrating with a solution of the material to be encapsulated.  
15 SUVs are prepared by extended sonication of MLVs to produce a homogeneous population of unilamellar liposomes. The material to be entrapped is added to a suspension of preformed MLVs and then sonicated. When using liposomes containing cationic lipids, the dried lipid film is resuspended in an appropriate solution such as sterile water or an isotonic buffer solution such as 10 mM Tris/NaCl, sonicated, and  
20 then the preformed liposomes are mixed directly with the DNA. The liposome and DNA form a very stable complex due to binding of the positively charged liposomes to the cationic DNA. SUVs find use with small nucleic acid fragments. LUVs are prepared by a number of methods, well known in the art. Commonly used methods include  $\text{Ca}^{2+}$ -EDTA chelation (Papahadjopoulos et al., *Biochim. Biophys. Acta*  
25 (1975) 394:483; Wilson et al., *Cell* (1979) 17:77); ether injection (Deamer, D. and Bangham, A., *Biochim. Biophys. Acta* (1976) 443:629; Ostro et al., *Biochem. Biophys. Res. Commun.* (1977) 76:836; Fraley et al., *Proc. Natl. Acad. Sci. USA* (1979) 76:3348); detergent dialysis (Enoch, H. and Strittmatter, P., *Proc. Natl. Acad. Sci. USA* (1979) 76:145); and reverse-phase evaporation (REV) (Fraley et al., *J. Biol.*  
30 *Chem.* (1980) 255:10431; Szoka, F. and Papahadjopoulos, D., *Proc. Natl. Acad. Sci.*

USA (1978) 75:145; Schaefer-Ridder et al., Science (1982) 215:166), which are herein incorporated by reference.

Generally, the ratio of DNA to liposomes will be from about 10:1 to about 1:10. Preferably, the ration will be from about 5:1 to about 1:5. More preferably, the  
5 ration will be about 3:1 to about 1:3. Still more preferably, the ratio will be about 1:1.

U.S. Patent No. 5,676,954 (which is herein incorporated by reference) reports on the injection of genetic material, complexed with cationic liposomes carriers, into mice. U.S. Patent Nos. 4,897,355, 4,946,787, 5,049,386, 5,459,127, 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469  
10 (which are herein incorporated by reference) provide cationic lipids for use in transfecting DNA into cells and mammals. U.S. Patent Nos. 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide methods for delivering DNA-cationic lipid complexes to mammals.

15 In certain embodiments, cells are engineered, ex vivo or in vivo, using a retroviral particle containing RNA which comprises a sequence encoding a polypeptide of the present invention. Retroviruses from which the retroviral plasmid vectors may be derived include, but are not limited to, Moloney Murine Leukemia Virus, spleen necrosis virus, Rous sarcoma Virus, Harvey Sarcoma Virus, avian  
20 leukosis virus, gibbon ape leukemia virus, human immunodeficiency virus, Myeloproliferative Sarcoma Virus, and mammary tumor virus.

The retroviral plasmid vector is employed to transduce packaging cell lines to form producer cell lines. Examples of packaging cells which may be transfected include, but are not limited to, the PE501, PA317, R-2, R-AM, PA12, T19-14X, VT-  
25 19-17-H2, RCRE, RCRIP, GP+E-86, GP+envAm12, and DAN cell lines as described in Miller, Human Gene Therapy 1:5-14 (1990), which is incorporated herein by reference in its entirety. The vector may transduce the packaging cells through any means known in the art. Such means include, but are not limited to, electroporation, the use of liposomes, and CaPO<sub>4</sub> precipitation. In one alternative, the retroviral

plasmid vector may be encapsulated into a liposome, or coupled to a lipid, and then administered to a host.

The producer cell line generates infectious retroviral vector particles which include polynucleotide encoding a polypeptide of the present invention. Such retroviral vector particles then may be employed, to transduce eukaryotic cells, either in vitro or in vivo. The transduced eukaryotic cells will express a polypeptide of the present invention.

In certain other embodiments, cells are engineered, ex vivo or in vivo, with polynucleotide contained in an adenovirus vector. Adenovirus can be manipulated such that it encodes and expresses a polypeptide of the present invention, and at the same time is inactivated in terms of its ability to replicate in a normal lytic viral life cycle. Adenovirus expression is achieved without integration of the viral DNA into the host cell chromosome, thereby alleviating concerns about insertional mutagenesis. Furthermore, adenoviruses have been used as live enteric vaccines for many years with an excellent safety profile (Schwartz, A. R. et al. (1974) Am. Rev. Respir. Dis.109:233-238). Finally, adenovirus mediated gene transfer has been demonstrated in a number of instances including transfer of alpha-1-antitrypsin and CFTR to the lungs of cotton rats (Rosenfeld, M. A. et al. (1991) Science 252:431-434; Rosenfeld et al., (1992) Cell 68:143-155). Furthermore, extensive studies to attempt to establish adenovirus as a causative agent in human cancer were uniformly negative (Green, M. et al. (1979) Proc. Natl. Acad. Sci. USA 76:6606).

Suitable adenoviral vectors useful in the present invention are described, for example, in Kozarsky and Wilson, Curr. Opin. Genet. Devel. 3:499-503 (1993); Rosenfeld et al., Cell 68:143-155 (1992); Engelhardt et al., Human Genet. Ther. 4:759-769 (1993); Yang et al., Nature Genet. 7:362-369 (1994); Wilson et al., Nature 365:691-692 (1993); and U.S. Patent No. 5,652,224, which are herein incorporated by reference. For example, the adenovirus vector Ad2 is useful and can be grown in human 293 cells. These cells contain the E1 region of adenovirus and constitutively express Ela and Elb, which complement the defective adenoviruses by providing the



products of the genes deleted from the vector. In addition to Ad2, other varieties of adenovirus (e.g., Ad3, Ad5, and Ad7) are also useful in the present invention.

Preferably, the adenoviruses used in the present invention are replication deficient. Replication deficient adenoviruses require the aid of a helper virus and/or packaging cell line to form infectious particles. The resulting virus is capable of infecting cells and can express a polynucleotide of interest which is operably linked to a promoter, but cannot replicate in most cells. Replication deficient adenoviruses may be deleted in one or more of all or a portion of the following genes: E1a, E1b, E3, E4, E2a, or L1 through L5.

In certain other embodiments, the cells are engineered, ex vivo or in vivo, using an adeno-associated virus (AAV). AAVs are naturally occurring defective viruses that require helper viruses to produce infectious particles (Muzyczka, N., Curr. Topics in Microbiol. Immunol. 158:97 (1992)). It is also one of the few viruses that may integrate its DNA into non-dividing cells. Vectors containing as little as 300 base pairs of AAV can be packaged and can integrate, but space for exogenous DNA is limited to about 4.5 kb. Methods for producing and using such AAVs are known in the art. See, for example, U.S. Patent Nos. 5,139,941, 5,173,414, 5,354,678, 5,436,146, 5,474,935, 5,478,745, and 5,589,377.

For example, an appropriate AAV vector for use in the present invention will include all the sequences necessary for DNA replication, encapsidation, and host-cell integration. The polynucleotide construct is inserted into the AAV vector using standard cloning methods, such as those found in Sambrook et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press (1989). The recombinant AAV vector is then transfected into packaging cells which are infected with a helper virus, using any standard technique, including lipofection, electroporation, calcium phosphate precipitation, etc. Appropriate helper viruses include adenoviruses, cytomegaloviruses, vaccinia viruses, or herpes viruses. Once the packaging cells are transfected and infected, they will produce infectious AAV viral particles which contain the polynucleotide construct. These viral particles are then used to transduce eukaryotic cells, either ex vivo or in vivo. The transduced cells will contain the

polynucleotide construct integrated into its genome, and will express a polypeptide of the invention.

Another method of gene therapy involves operably associating heterologous control regions and endogenous polynucleotide sequences (e.g. encoding a polypeptide of the present invention) via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not normally expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made, using standard techniques known in the art, which contain the promoter with targeting sequences flanking the promoter. Suitable promoters are described herein. The targeting sequence is sufficiently complementary to an endogenous sequence to permit homologous recombination of the promoter-targeting sequence with the endogenous sequence. The targeting sequence will be sufficiently near the 5' end of the desired endogenous polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination.

The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter. The amplified promoter and targeting sequences are digested and ligated together.

The promoter-targeting sequence construct is delivered to the cells, either as naked polynucleotide, or in conjunction with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, whole viruses, lipofection, precipitating agents, etc., described in more detail above. The P promoter-targeting sequence can

be delivered by any method, included direct needle injection, intravenous injection, topical administration, catheter infusion, particle accelerators, etc. The methods are described in more detail below.

The promoter-targeting sequence construct is taken up by cells. Homologous  
5 recombination between the construct and the endogenous sequence takes place, such that an endogenous sequence is placed under the control of the promoter. The promoter then drives the expression of the endogenous sequence.

Preferably, the polynucleotide encoding a polypeptide of the present invention contains a secretory signal sequence that facilitates secretion of the protein.  
10 Typically, the signal sequence is positioned in the coding region of the polynucleotide to be expressed towards or at the 5' end of the coding region. The signal sequence may be homologous or heterologous to the polynucleotide of interest and may be homologous or heterologous to the cells to be transfected. Additionally, the signal sequence may be chemically synthesized using methods known in the art.

15 Any mode of administration of any of the above-described polynucleotides constructs can be used so long as the mode results in the expression of one or more molecules in an amount sufficient to provide a therapeutic effect. This includes direct needle injection, systemic injection, catheter infusion, biolistic injectors, particle accelerators (i.e., "gene guns"), gelfoam sponge depots, other commercially available  
20 depot materials, osmotic pumps (e.g., Alza minipumps), oral or suppository solid (tablet or pill) pharmaceutical formulations, and decanting or topical applications during surgery. For example, direct injection of naked calcium phosphate-precipitated plasmid into rat liver and rat spleen or a protein-coated plasmid into the portal vein has resulted in gene expression of the foreign gene in the  
25 rat livers (Kaneda et al., Science 243:375 (1989)).

A preferred method of local administration is by direct injection. Preferably, a recombinant molecule of the present invention complexed with a delivery vehicle is administered by direct injection into or locally within the area of arteries. Administration of a composition locally within the area of arteries refers to injecting  
30 the composition centimeters and preferably, millimeters within arteries.

Another method of local administration is to contact a polynucleotide construct of the present invention in or around a surgical wound. For example, a patient can undergo surgery and the polynucleotide construct can be coated on the surface of tissue inside the wound or the construct can be injected into areas of tissue  
5 inside the wound.

Therapeutic compositions useful in systemic administration, include recombinant molecules of the present invention complexed to a targeted delivery vehicle of the present invention. Suitable delivery vehicles for use with systemic administration comprise liposomes comprising ligands for targeting the vehicle to a  
10 particular site.

Preferred methods of systemic administration, include intravenous injection, aerosol, oral and percutaneous (topical) delivery. Intravenous injections can be performed using methods standard in the art. Aerosol delivery can also be performed using methods standard in the art (see, for example, Stribling et al., Proc. Natl. Acad.  
15 Sci. USA 189:11277-11281, 1992, which is incorporated herein by reference). Oral delivery can be performed by complexing a polynucleotide construct of the present invention to a carrier capable of withstanding degradation by digestive enzymes in the gut of an animal. Examples of such carriers, include plastic capsules or tablets, such as those known in the art. Topical delivery can be performed by mixing a  
20 polynucleotide construct of the present invention with a lipophilic reagent (e.g., DMSO) that is capable of passing into the skin.

Determining an effective amount of substance to be delivered can depend upon a number of factors including, for example, the chemical structure and biological activity of the substance, the age and weight of the animal, the precise  
25 condition requiring treatment and its severity, and the route of administration. The frequency of treatments depends upon a number of factors, such as the amount of polynucleotide constructs administered per dose, as well as the health and history of the subject. The precise amount, number of doses, and timing of doses will be determined by the attending physician or veterinarian.

Therapeutic compositions of the present invention can be administered to any animal, preferably to mammals and birds. Preferred mammals include humans, dogs, cats, mice, rats, rabbits sheep, cattle, horses and pigs, with humans being particularly preferred.

5

#### **Biological Activities**

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, can be used in assays to test for one or more biological activities. If these polynucleotides or polypeptides, or agonists or antagonists of the present invention,  
10 do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides and polypeptides, and agonists or antagonists could be used to treat the associated disease.

15

#### **Immune Activity**

A polypeptide or polynucleotide, or agonists or antagonists of the present invention may be useful in treating deficiencies or disorders of the immune system, by activating or inhibiting the proliferation, differentiation, or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called  
20 hematopoiesis, producing myeloid (platelets, red blood cells, neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells from pluripotent stem cells. The etiology of these immune deficiencies or disorders may be genetic, somatic, such as cancer or some autoimmune disorders, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, polynucleotides or polypeptides, or agonists or antagonists  
25 of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention may be useful in treating or detecting deficiencies or disorders of hematopoietic cells. Polynucleotides or polypeptides, or agonists or antagonists of the  
30 present invention could be used to increase differentiation and proliferation of

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hematopoietic cells, including the pluripotent stem cells, in an effort to treat those disorders associated with a decrease in certain (or many) types hematopoietic cells. Examples of immunologic deficiency syndromes include, but are not limited to: blood protein disorders (e.g. agammaglobulinemia, dysgammaglobulinemia), ataxia  
5 telangiectasia, common variable immunodeficiency, Digeorge Syndrome, HIV infection, HTLV-BLV infection, leukocyte adhesion deficiency syndrome, lymphopenia, phagocyte bactericidal dysfunction, severe combined immunodeficiency (SCIDs), Wiskott-Aldrich Disorder, anemia, thrombocytopenia, or hemoglobinuria.

10 Moreover, polynucleotides or polypeptides, or agonists or antagonists of the present invention could also be used to modulate hemostatic (the stopping of bleeding) or thrombolytic activity (clot formation). For example, by increasing hemostatic or thrombolytic activity, polynucleotides or polypeptides, or agonists or antagonists of the present invention could be used to treat blood coagulation disorders  
15 (e.g., afibrinogenemia, factor deficiencies), blood platelet disorders (e.g. thrombocytopenia), or wounds resulting from trauma, surgery, or other causes. Alternatively, polynucleotides or polypeptides, or agonists or antagonists of the present invention that can decrease hemostatic or thrombolytic activity could be used to inhibit or dissolve clotting. These molecules could be important in the treatment of  
20 heart attacks (infarction), strokes, or scarring.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be useful in treating or detecting autoimmune disorders. Many autoimmune disorders result from inappropriate recognition of self as foreign material by immune cells. This inappropriate recognition results in an immune response  
25 leading to the destruction of the host tissue. Therefore, the administration of polynucleotides or polypeptides, or agonists or antagonists of the present invention that can inhibit an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing autoimmune disorders.

Examples of autoimmune disorders that can be treated or detected include, but are not limited to: Addison's Disease, hemolytic anemia, antiphospholipid syndrome, rheumatoid arthritis, dermatitis, allergic encephalomyelitis, glomerulonephritis, Goodpasture's Syndrome, Graves' Disease, Multiple Sclerosis, Myasthenia Gravis, Neuritis, Ophthalmia, Bullous Pemphigoid, Pemphigus, Polyendocrinopathies, Purpura, Reiter's Disease, Stiff-Man Syndrome, Autoimmune Thyroiditis, Systemic Lupus Erythematosus, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitis, and autoimmune inflammatory eye disease.

10 Similarly, allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems, may also be treated by polynucleotides or polypeptides, or agonists or antagonists of the present invention. Moreover, these molecules can be used to treat anaphylaxis, hypersensitivity to an antigenic molecule, or blood group incompatibility.

15 Polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be used to treat and/or prevent organ rejection or graft-versus-host disease (GVHD). Organ rejection occurs by host immune cell destruction of the transplanted tissue through an immune response. Similarly, an immune response is also involved in GVHD, but, in this case, the foreign transplanted immune cells  
20 destroy the host tissues. The administration of polynucleotides or polypeptides, or agonists or antagonists of the present invention that inhibits an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing organ rejection or GVHD.

25 Similarly, polynucleotides or polypeptides, or agonists or antagonists of the present invention may also be used to modulate inflammation. For example, polynucleotides or polypeptides, or agonists or antagonists of the present invention may inhibit the proliferation and differentiation of cells involved in an inflammatory response. These molecules can be used to treat inflammatory conditions, both chronic and acute conditions, including chronic prostatitis, granulomatous prostatitis and  
30 malacoplakia, inflammation associated with infection (e.g., septic shock, sepsis, or

systemic inflammatory response syndrome (SIRS)), ischemia-reperfusion injury, endotoxin lethality, arthritis, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine induced lung injury, inflammatory bowel disease, Crohn's disease, or resulting from over production of cytokines (e.g., TNF or IL-1.)

5

### **Hyperproliferative Disorders**

Polynucleotides or polypeptides, or agonists or antagonists of the present invention can be used to treat or detect hyperproliferative disorders, including neoplasms. Polynucleotides or polypeptides, or agonists or antagonists of the present  
10 invention may inhibit the proliferation of the disorder through direct or indirect interactions. Alternatively, Polynucleotides or polypeptides, or agonists or antagonists of the present invention may proliferate other cells which can inhibit the hyperproliferative disorder.

For example, by increasing an immune response, particularly increasing  
15 antigenic qualities of the hyperproliferative disorder or by proliferating, differentiating, or mobilizing T-cells, hyperproliferative disorders can be treated. This immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, decreasing an immune response may also be a method of treating hyperproliferative disorders, such  
20 as a chemotherapeutic agent.

Examples of hyperproliferative disorders that can be treated or detected by Polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to neoplasms located in the: colon, abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid,  
25 pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital.

Similarly, other hyperproliferative disorders can also be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention.  
30 Examples of such hyperproliferative disorders include, but are not limited to:



hypergammaglobulinemia, lymphoproliferative disorders, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenström's Macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

5           One preferred embodiment utilizes polynucleotides of the present invention to inhibit aberrant cellular division, by gene therapy using the present invention, and/or protein fusions or fragments thereof.

          Thus, the present invention provides a method for treating cell proliferative disorders by inserting into an abnormally proliferating cell a polynucleotide of the  
10       present invention, wherein said polynucleotide represses said expression.

          Another embodiment of the present invention provides a method of treating cell-proliferative disorders in individuals comprising administration of one or more active gene copies of the present invention to an abnormally proliferating cell or cells. In a preferred embodiment, polynucleotides of the present invention is a DNA  
15       construct comprising a recombinant expression vector effective in expressing a DNA sequence encoding said polynucleotides. In another preferred embodiment of the present invention, the DNA construct encoding the polynucleotides of the present invention is inserted into cells to be treated utilizing a retrovirus, or more preferably an adenoviral vector (See G J. Nabel, et. al., PNAS 1999 96: 324-326, which is  
20       hereby incorporated by reference). In a most preferred embodiment, the viral vector is defective and will not transform non-proliferating cells, only proliferating cells. Moreover, in a preferred embodiment, the polynucleotides of the present invention inserted into proliferating cells either alone, or in combination with or fused to other polynucleotides, can then be modulated via an external stimulus (i.e. magnetic,  
25       specific small molecule, chemical, or drug administration, etc.), which acts upon the promoter upstream of said polynucleotides to induce expression of the encoded protein product. As such the beneficial therapeutic affect of the present invention may be expressly modulated (i.e. to increase, decrease, or inhibit expression of the present invention) based upon said external stimulus.

Polynucleotides of the present invention may be useful in repressing expression of oncogenic genes or antigens. By "repressing expression of the oncogenic genes " is intended the suppression of the transcription of the gene, the degradation of the gene transcript (pre-message RNA), the inhibition of splicing, the destruction of the messenger RNA, the prevention of the post-translational modifications of the protein, the destruction of the protein, or the inhibition of the normal function of the protein.

For local administration to abnormally proliferating cells, polynucleotides of the present invention may be administered by any method known to those of skill in the art including, but not limited to transfection, electroporation, microinjection of cells, or in vehicles such as liposomes, lipofectin, or as naked polynucleotides, or any other method described throughout the specification. The polynucleotide of the present invention may be delivered by known gene delivery systems such as, but not limited to, retroviral vectors (Gilboa, J. Virology 44:845 (1982); Hocke, Nature 320:275 (1986); Wilson, et al., Proc. Natl. Acad. Sci. U.S.A. 85:3014), vaccinia virus system (Chakrabarty et al., Mol. Cell Biol. 5:3403 (1985) or other efficient DNA delivery systems (Yates et al., Nature 313:812 (1985)) known to those skilled in the art. These references are exemplary only and are hereby incorporated by reference. In order to specifically deliver or transfect cells which are abnormally proliferating and spare non-dividing cells, it is preferable to utilize a retrovirus, or adenoviral (as described in the art and elsewhere herein) delivery system known to those of skill in the art. Since host DNA replication is required for retroviral DNA to integrate and the retrovirus will be unable to self replicate due to the lack of the retrovirus genes needed for its life cycle. Utilizing such a retroviral delivery system for polynucleotides of the present invention will target said gene and constructs to abnormally proliferating cells and will spare the non-dividing normal cells.

The polynucleotides of the present invention may be delivered directly to cell proliferative disorder/disease sites in internal organs, body cavities and the like by use of imaging devices used to guide an injecting needle directly to the disease site. The

polynucleotides of the present invention may also be administered to disease sites at the time of surgical intervention.

By "cell proliferative disease" is meant any human or animal disease or disorder, affecting any one or any combination of organs, cavities, or body parts, which is characterized by single or multiple local abnormal proliferations of cells, groups of cells, or tissues, whether benign or malignant.

Any amount of the polynucleotides of the present invention may be administered as long as it has a biologically inhibiting effect on the proliferation of the treated cells. Moreover, it is possible to administer more than one of the polynucleotide of the present invention simultaneously to the same site. By "biologically inhibiting" is meant partial or total growth inhibition as well as decreases in the rate of proliferation or growth of the cells. The biologically inhibitory dose may be determined by assessing the effects of the polynucleotides of the present invention on target malignant or abnormally proliferating cell growth in tissue culture, tumor growth in animals and cell cultures, or any other method known to one of ordinary skill in the art.

The present invention is further directed to antibody-based therapies which involve administering of anti-polypeptides and anti-polynucleotide antibodies to a mammalian, preferably human, patient for treating one or more of the described disorders. Methods for producing anti-polypeptides and anti-polynucleotide antibodies polyclonal and monoclonal antibodies are described in detail elsewhere herein. Such antibodies may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of

the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

In particular, the antibodies, fragments and derivatives of the present invention are useful for treating a subject having or developing cell proliferative and/or differentiation disorders as described herein. Such treatment comprises administering  
5 a single or multiple doses of the antibody, or a fragment, derivative, or a conjugate thereof.

The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or  
10 hematopoietic growth factors, for example., which serve to increase the number or activity of effector cells which interact with the antibodies.

It is preferred to use high affinity and/or potent in vivo inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and  
15 therapy of disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides, including fragments thereof. Preferred binding affinities include those with a dissociation constant or  $K_d$  less than  $5 \times 10^{-6}M$ ,  $10^{-6}M$ ,  $5 \times 10^{-7}M$ ,  $10^{-7}M$ ,  $5 \times 10^{-8}M$ ,  $10^{-8}M$ ,  $5 \times 10^{-9}M$ ,  $10^{-9}M$ ,  
20  $5 \times 10^{-10}M$ ,  $10^{-10}M$ ,  $5 \times 10^{-11}M$ ,  $10^{-11}M$ ,  $5 \times 10^{-12}M$ ,  $10^{-12}M$ ,  $5 \times 10^{-13}M$ ,  $10^{-13}M$ ,  $5 \times 10^{-14}M$ ,  $10^{-14}M$ ,  $5 \times 10^{-15}M$ , and  $10^{-15}M$ .

Moreover, polypeptides of the present invention are useful in inhibiting the angiogenesis of proliferative cells or tissues, either alone, as a protein fusion, or in combination with other polypeptides directly or indirectly, as described elsewhere  
25 herein. In a most preferred embodiment, said anti-angiogenesis effect may be achieved indirectly, for example, through the inhibition of hematopoietic, tumor-specific cells, such as tumor-associated macrophages (See Joseph IB, et al. J Natl Cancer Inst, 90(21):1648-53 (1998), which is hereby incorporated by reference). Antibodies directed to polypeptides or polynucleotides of the present invention may  
30 also result in inhibition of angiogenesis directly, or indirectly (See Witte L, et al.,

Cancer Metastasis Rev. 17(2):155-61 (1998), which is hereby incorporated by reference)).

Polypeptides, including protein fusions, of the present invention, or fragments thereof may be useful in inhibiting proliferative cells or tissues through the induction of apoptosis. Said polypeptides may act either directly, or indirectly to induce apoptosis of proliferative cells and tissues, for example in the activation of a death-domain receptor, such as tumor necrosis factor (TNF) receptor-1, CD95 (Fas/APO-1), TNF-receptor-related apoptosis-mediated protein (TRAMP) and TNF-related apoptosis-inducing ligand (TRAIL) receptor-1 and -2 (See Schulze-Osthoff K, et.al., Eur J Biochem 254(3):439-59 (1998), which is hereby incorporated by reference). Moreover, in another preferred embodiment of the present invention, said polypeptides may induce apoptosis through other mechanisms, such as in the activation of other proteins which will activate apoptosis, or through stimulating the expression of said proteins, either alone or in combination with small molecule drugs or adjuvants, such as apoptonin, galectins, thioredoxins, antiinflammatory proteins (See for example, Mutat Res 400(1-2):447-55 (1998), Med Hypotheses.50(5):423-33 (1998), Chem Biol Interact. Apr 24;111-112:23-34 (1998), J Mol Med.76(6):402-12 (1998), Int J Tissue React;20(1):3-15 (1998), which are all hereby incorporated by reference).

Polypeptides, including protein fusions to, or fragments thereof, of the present invention are useful in inhibiting the metastasis of proliferative cells or tissues. Inhibition may occur as a direct result of administering polypeptides, or antibodies directed to said polypeptides as described elsewhere herein, or indirectly, such as activating the expression of proteins known to inhibit metastasis, for example alpha 4 integrins, (See, e.g., Curr Top Microbiol Immunol 1998;231:125-41, which is hereby incorporated by reference). Such therapeutic affects of the present invention may be achieved either alone, or in combination with small molecule drugs or adjuvants.

In another embodiment, the invention provides a method of delivering compositions containing the polypeptides of the invention (e.g., compositions containing polypeptides or polypeptide antibodies associated with heterologous

polypeptides, heterologous nucleic acids, toxins, or prodrugs) to targeted cells expressing the polypeptide of the present invention. Polypeptides or polypeptide antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. Polypeptides, protein fusions to, or fragments thereof, of the present invention are useful in enhancing the immunogenicity and/or antigenicity of proliferating cells or tissues, either directly, such as would occur if the polypeptides of the present invention 'vaccinated' the immune response to respond to proliferative antigens and immunogens, or indirectly, such as in activating the expression of proteins known to enhance the immune response (e.g. chemokines), to said antigens and immunogens.

#### **Cardiovascular Disorders**

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat cardiovascular disorders, including peripheral artery disease, such as limb ischemia.

Cardiovascular disorders include cardiovascular abnormalities, such as arterio-arterial fistula, arteriovenous fistula, cerebral arteriovenous malformations, congenital heart defects, pulmonary atresia, and Scimitar Syndrome. Congenital heart defects include aortic coarctation, cor triatriatum, coronary vessel anomalies, crisscross heart, dextrocardia, patent ductus arteriosus, Ebstein's anomaly, Eisenmenger complex, hypoplastic left heart syndrome, levocardia, tetralogy of fallot, transposition of great vessels, double outlet right ventricle, tricuspid atresia, persistent truncus arteriosus, and heart septal defects, such as aortopulmonary septal defect, endocardial cushion defects, Lutembacher's Syndrome, trilog of Fallot, ventricular heart septal defects.

Cardiovascular disorders also include heart disease, such as arrhythmias, carcinoid heart disease, high cardiac output, low cardiac output, cardiac tamponade, endocarditis (including bacterial), heart aneurysm, cardiac arrest, congestive heart failure, congestive cardiomyopathy, paroxysmal dyspnea, cardiac edema, heart hypertrophy, congestive cardiomyopathy, left ventricular hypertrophy, right

ventricular hypertrophy, post-infarction heart rupture, ventricular septal rupture, heart valve diseases, myocardial diseases, myocardial ischemia, pericardial effusion, pericarditis (including constrictive and tuberculous), pneumopericardium, postpericardiotomy syndrome, pulmonary heart disease, rheumatic heart disease,  
5 ventricular dysfunction, hyperemia, cardiovascular pregnancy complications, Scimitar Syndrome, cardiovascular syphilis, and cardiovascular tuberculosis.

Arrhythmias include sinus arrhythmia, atrial fibrillation, atrial flutter, bradycardia, extrasystole, Adams-Stokes Syndrome, bundle-branch block, sinoatrial block, long QT syndrome, parasystole, Lown-Ganong-Levine Syndrome, Mahaim-type  
10 pre-excitation syndrome, Wolff-Parkinson-White syndrome, sick sinus syndrome, tachycardias, and ventricular fibrillation. Tachycardias include paroxysmal tachycardia, supraventricular tachycardia, accelerated idioventricular rhythm, atrioventricular nodal reentry tachycardia, ectopic atrial tachycardia, ectopic junctional tachycardia, sinoatrial nodal reentry tachycardia, sinus tachycardia,  
15 Torsades de Pointes, and ventricular tachycardia.

Heart valve disease include aortic valve insufficiency, aortic valve stenosis, hear murmurs, aortic valve prolapse, mitral valve prolapse, tricuspid valve prolapse, mitral valve insufficiency, mitral valve stenosis, pulmonary atresia, pulmonary valve insufficiency, pulmonary valve stenosis, tricuspid atresia, tricuspid valve  
20 insufficiency, and tricuspid valve stenosis.

Myocardial diseases include alcoholic cardiomyopathy, congestive cardiomyopathy, hypertrophic cardiomyopathy, aortic subvalvular stenosis, pulmonary subvalvular stenosis, restrictive cardiomyopathy, Chagas cardiomyopathy, endocardial fibroelastosis, endomyocardial fibrosis, Kearns Syndrome, myocardial  
25 reperfusion injury, and myocarditis.

Myocardial ischemias include coronary disease, such as angina pectoris, coronary aneurysm, coronary arteriosclerosis, coronary thrombosis, coronary vasospasm, myocardial infarction and myocardial stunning.

Cardiovascular diseases also include vascular diseases such as aneurysms,  
30 angiodyplasia, angiomatosis, bacillary angiomatosis, Hippel-Lindau Disease,

Klippel-Trenaunay-Weber Syndrome. Sturge-Weber Syndrome, angioneurotic edema, aortic diseases, Takayasu's Arteritis, aortitis, Leriche's Syndrome, arterial occlusive diseases, arteritis, enarteritis, polyarteritis nodosa, cerebrovascular disorders, diabetic angiopathies, diabetic retinopathy, embolisms, thrombosis, erythromelalgia, hemorrhoids, hepatic veno-occlusive disease, hypertension, hypotension, ischemia, peripheral vascular diseases, phlebitis, pulmonary veno-occlusive disease, Raynaud's disease, CREST syndrome, retinal vein occlusion, Scimitar syndrome, superior vena cava syndrome, telangiectasia, atacia telangiectasia, hereditary hemorrhagic telangiectasia, varicocele, varicose veins, varicose ulcer, vasculitis, and venous insufficiency.

Aneurysms include dissecting aneurysms, false aneurysms, infected aneurysms, ruptured aneurysms, aortic aneurysms, cerebral aneurysms, coronary aneurysms, heart aneurysms, and iliac aneurysms.

Arterial occlusive diseases include arteriosclerosis, intermittent claudication, carotid stenosis, fibromuscular dysplasias, mesenteric vascular occlusion, Moyamoya disease, renal artery obstruction, retinal artery occlusion, and thromboangiitis obliterans.

Cerebrovascular disorders include carotid artery diseases, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformation, cerebral artery diseases, cerebral embolism and thrombosis, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, cerebral hemorrhage, epidural hematoma, subdural hematoma, subarachnoid hemorrhage, cerebral infarction, cerebral ischemia (including transient), subclavian steal syndrome, periventricular leukomalacia, vascular headache, cluster headache, migraine, and vertebrobasilar insufficiency.

Embolisms include air embolisms, amniotic fluid embolisms, cholesterol embolisms, blue toe syndrome, fat embolisms, pulmonary embolisms, and thromboembolisms. Thrombosis include coronary thrombosis, hepatic vein thrombosis, retinal vein occlusion, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, and thrombophlebitis.



Ischemia includes cerebral ischemia, ischemic colitis, compartment syndromes, anterior compartment syndrome, myocardial ischemia, reperfusion injuries, and peripheral limb ischemia. Vasculitis includes aortitis, arteritis, Behcet's Syndrome, Churg-Strauss Syndrome, mucocutaneous lymph node syndrome, 5 thromboangiitis obliterans, hypersensitivity vasculitis, Schoenlein-Henoch purpura, allergic cutaneous vasculitis, and Wegener's granulomatosis.

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, are especially effective for the treatment of critical limb ischemia and coronary disease.

10 Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppository solid pharmaceutical formulations, decanting or 15 topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

#### 20 **Anti-Angiogenesis Activity**

The naturally occurring balance between endogenous stimulators and inhibitors of angiogenesis is one in which inhibitory influences predominate. Rastinejad *et al.*, *Cell* 56:345-355 (1989). In those rare instances in which neovascularization occurs under normal physiological conditions, such as wound 25 healing, organ regeneration, embryonic development, and female reproductive processes, angiogenesis is stringently regulated and spatially and temporally delimited. Under conditions of pathological angiogenesis such as that characterizing solid tumor growth, these regulatory controls fail. Unregulated angiogenesis becomes pathologic and sustains progression of many neoplastic and non-neoplastic diseases. 30 A number of serious diseases are dominated by abnormal neovascularization

including solid tumor growth and metastases, arthritis, some types of eye disorders, and psoriasis. See, e.g., reviews by Moses *et al.*, *Biotech.* 9:630-634 (1991); Folkman *et al.*, *N. Engl. J. Med.*, 333:1757-1763 (1995); Auerbach *et al.*, *J. Microvasc. Res.* 29:401-411 (1985); Folkman, *Advances in Cancer Research*, eds. Klein and  
5 Weinhouse, Academic Press, New York, pp. 175-203 (1985); Patz, *Am. J. Ophthalmol.* 94:715-743 (1982); and Folkman *et al.*, *Science* 221:719-725 (1983). In a number of pathological conditions, the process of angiogenesis contributes to the disease state. For example, significant data have accumulated which suggest that the growth of solid tumors is dependent on angiogenesis. Folkman and Klagsbrun,  
10 *Science* 235:442-447 (1987).

The polynucleotides encoding a polypeptide of the present invention may be administered along with other polynucleotides encoding an angiogenic protein. Examples of angiogenic proteins include, but are not limited to, acidic and basic fibroblast growth factors, VEGF-1, VEGF-2, VEGF-3, epidermal growth factor alpha  
15 and beta, platelet-derived endothelial cell growth factor, platelet-derived growth factor, tumor necrosis factor alpha, hepatocyte growth factor, insulin like growth factor, colony stimulating factor, macrophage colony stimulating factor, granulocyte/macrophage colony stimulating factor, and nitric oxide synthase.

The present invention provides for treatment of diseases or disorders  
20 associated with neovascularization by administration of the polynucleotides and/or polypeptides of the invention, as well as agonists or antagonists of the present invention. Malignant and metastatic conditions which can be treated with the polynucleotides and polypeptides, or agonists or antagonists of the invention include, but are not limited to, malignancies, solid tumors, and cancers described herein and  
25 otherwise known in the art (for a review of such disorders, see Fishman *et al.*, *Medicine*, 2d Ed., J. B. Lippincott Co., Philadelphia (1985)). Thus, the present invention provides a method of treating an angiogenesis-related disease and/or disorder, comprising administering to an individual in need thereof a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist of the  
30 invention. For example, polynucleotides, polypeptides, antagonists and/or agonists

may be utilized in a variety of additional methods in order to therapeutically treat a cancer or tumor. Cancers which may be treated with polynucleotides, polypeptides, antagonists and/or agonists include, but are not limited to solid tumors, including prostate, lung, breast, ovarian, stomach, pancreas, larynx, esophagus, testes, liver, parotid, biliary tract, colon, rectum, cervix, uterus, endometrium, kidney, bladder, thyroid cancer; primary tumors and metastases; melanomas; glioblastoma; Kaposi's sarcoma; leiomyosarcoma; non-small cell lung cancer; colorectal cancer; advanced malignancies; and blood born tumors such as leukemias. For example, polynucleotides, polypeptides, antagonists and/or agonists may be delivered topically, in order to treat cancers such as skin cancer, head and neck tumors, breast tumors, and Kaposi's sarcoma.

Within yet other aspects, polynucleotides, polypeptides, antagonists and/or agonists may be utilized to treat superficial forms of bladder cancer by, for example, intravesical administration. Polynucleotides, polypeptides, antagonists and/or agonists may be delivered directly into the tumor, or near the tumor site, via injection or a catheter. Of course, as the artisan of ordinary skill will appreciate, the appropriate mode of administration will vary according to the cancer to be treated. Other modes of delivery are discussed herein.

Polynucleotides, polypeptides, antagonists and/or agonists may be useful in treating other disorders, besides cancers, which involve angiogenesis. These disorders include, but are not limited to: benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; arteriosclerotic plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uveitis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization;

telangiectasia; hemophilic joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis.

For example, within one aspect of the present invention methods are provided for treating hypertrophic scars and keloids, comprising the step of administering a polynucleotide, polypeptide, antagonist and/or agonist of the invention to a hypertrophic scar or keloid.

Within one embodiment of the present invention polynucleotides, polypeptides, antagonists and/or agonists are directly injected into a hypertrophic scar or keloid, in order to prevent the progression of these lesions. This therapy is of particular value in the prophylactic treatment of conditions which are known to result in the development of hypertrophic scars and keloids (e.g., burns), and is preferably initiated after the proliferative phase has had time to progress (approximately 14 days after the initial injury), but before hypertrophic scar or keloid development. As noted above, the present invention also provides methods for treating neovascular diseases of the eye, including for example, corneal neovascularization, neovascular glaucoma, proliferative diabetic retinopathy, retrolental fibroplasia and macular degeneration.

Moreover, Ocular disorders associated with neovascularization which can be treated with the polynucleotides and polypeptides of the present invention (including agonists and/or antagonists) include, but are not limited to: neovascular glaucoma, diabetic retinopathy, retinoblastoma, retrolental fibroplasia, uveitis, retinopathy of prematurity macular degeneration, corneal graft neovascularization, as well as other eye inflammatory diseases, ocular tumors and diseases associated with choroidal or iris neovascularization. See, e.g., reviews by Waltman *et al.*, *Am. J. Ophthalmol.* 85:704-710 (1978) and Gartner *et al.*, *Surv. Ophthalmol.* 22:291-312 (1978).

Thus, within one aspect of the present invention methods are provided for treating neovascular diseases of the eye such as corneal neovascularization (including corneal graft neovascularization), comprising the step of administering to a patient a therapeutically effective amount of a compound (as described above) to the cornea, such that the formation of blood vessels is inhibited. Briefly, the cornea is a tissue which normally lacks blood vessels. In certain pathological conditions however,

capillaries may extend into the cornea from the pericorneal vascular plexus of the limbus. When the cornea becomes vascularized, it also becomes clouded, resulting in a decline in the patient's visual acuity. Visual loss may become complete if the cornea completely opacitates. A wide variety of disorders can result in corneal  
5 neovascularization, including for example, corneal infections (e.g., trachoma, herpes simplex keratitis, leishmaniasis and onchocerciasis), immunological processes (e.g., graft rejection and Stevens-Johnson's syndrome), alkali burns, trauma, inflammation (of any cause), toxic and nutritional deficiency states, and as a complication of wearing contact lenses.

10 Within particularly preferred embodiments of the invention, may be prepared for topical administration in saline (combined with any of the preservatives and antimicrobial agents commonly used in ocular preparations), and administered in eyedrop form. The solution or suspension may be prepared in its pure form and administered several times daily. Alternatively, anti-angiogenic compositions,  
15 prepared as described above, may also be administered directly to the cornea. Within preferred embodiments, the anti-angiogenic composition is prepared with a muco-adhesive polymer which binds to cornea. Within further embodiments, the anti-angiogenic factors or anti-angiogenic compositions may be utilized as an adjunct to conventional steroid therapy. Topical therapy may also be useful prophylactically in  
20 corneal lesions which are known to have a high probability of inducing an angiogenic response (such as chemical burns). In these instances the treatment, likely in combination with steroids, may be instituted immediately to help prevent subsequent complications.

Within other embodiments, the compounds described above may be injected  
25 directly into the corneal stroma by an ophthalmologist under microscopic guidance. The preferred site of injection may vary with the morphology of the individual lesion, but the goal of the administration would be to place the composition at the advancing front of the vasculature (i.e., interspersed between the blood vessels and the normal cornea). In most cases this would involve perilimbal corneal injection to "protect" the  
30 cornea from the advancing blood vessels. This method may also be utilized shortly

after a corneal insult in order to prophylactically prevent corneal neovascularization. In this situation the material could be injected in the perilimbic cornea interspersed between the corneal lesion and its undesired potential limbic blood supply. Such methods may also be utilized in a similar fashion to prevent capillary invasion of transplanted corneas. In a sustained-release form injections might only be required 2-3 times per year. A steroid could also be added to the injection solution to reduce inflammation resulting from the injection itself.

Within another aspect of the present invention, methods are provided for treating neovascular glaucoma, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. In one embodiment, the compound may be administered topically to the eye in order to treat early forms of neovascular glaucoma. Within other embodiments, the compound may be implanted by injection into the region of the anterior chamber angle. Within other embodiments, the compound may also be placed in any location such that the compound is continuously released into the aqueous humor. Within another aspect of the present invention, methods are provided for treating proliferative diabetic retinopathy, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eyes, such that the formation of blood vessels is inhibited.

Within particularly preferred embodiments of the invention, proliferative diabetic retinopathy may be treated by injection into the aqueous humor or the vitreous, in order to increase the local concentration of the polynucleotide, polypeptide, antagonist and/or agonist in the retina. Preferably, this treatment should be initiated prior to the acquisition of severe disease requiring photocoagulation.

Within another aspect of the present invention, methods are provided for treating retrolental fibroplasia, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. The

compound may be administered topically, via intravitreal injection and/or via intraocular implants.

Additionally, disorders which can be treated with the polynucleotides, polypeptides, agonists and/or antagonists include, but are not limited to, hemangioma, arthritis, psoriasis, angiofibroma, atherosclerotic plaques, delayed wound healing, granulations, hemophilic joints, hypertrophic scars, nonunion fractures, Osler-Weber syndrome, pyogenic granuloma, scleroderma, trachoma, and vascular adhesions.

Moreover, disorders and/or states, which can be treated with the polynucleotides, polypeptides, agonists and/or antagonists include, but are not limited to, solid tumors, blood born tumors such as leukemias, tumor metastasis, Kaposi's sarcoma, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas, rheumatoid arthritis, psoriasis, ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, and uveitis, delayed wound healing, endometriosis, vasculogenesis, granulations, hypertrophic scars (keloids), nonunion fractures, scleroderma, trachoma, vascular adhesions, myocardial angiogenesis, coronary collaterals, cerebral collaterals, arteriovenous malformations, ischemic limb angiogenesis, Osler-Webber Syndrome, plaque neovascularization, telangiectasia, hemophilic joints, angiofibroma fibromuscular dysplasia, wound granulation, Crohn's disease, atherosclerosis, birth control agent by preventing vascularization required for embryo implantation controlling menstruation, diseases that have angiogenesis as a pathologic consequence such as cat scratch disease (Rochelominalia quintosa), ulcers (*Helicobacter pylori*), Bartonellosis and bacillary angiomatosis.

In one aspect of the birth control method, an amount of the compound sufficient to block embryo implantation is administered before or after intercourse and fertilization have occurred, thus providing an effective method of birth control, possibly a "morning after" method. Polynucleotides, polypeptides, agonists and/or antagonists may also be used in controlling menstruation or administered as either a

peritoneal lavage fluid or for peritoneal implantation in the treatment of endometriosis.

Polynucleotides, polypeptides, agonists and/or agonists of the present invention may be incorporated into surgical sutures in order to prevent stitch  
5 granulomas.

Polynucleotides, polypeptides, agonists and/or agonists may be utilized in a wide variety of surgical procedures. For example, within one aspect of the present invention a compositions (in the form of, for example, a spray or film) may be utilized to coat or spray an area prior to removal of a tumor, in order to isolate normal  
10 surrounding tissues from malignant tissue, and/or to prevent the spread of disease to surrounding tissues. Within other aspects of the present invention, compositions (e.g., in the form of a spray) may be delivered via endoscopic procedures in order to coat tumors, or inhibit angiogenesis in a desired locale. Within yet other aspects of the present invention, surgical meshes which have been coated with anti- angiogenic  
15 compositions of the present invention may be utilized in any procedure wherein a surgical mesh might be utilized. For example, within one embodiment of the invention a surgical mesh laden with an anti-angiogenic composition may be utilized during abdominal cancer resection surgery (e.g., subsequent to colon resection) in order to provide support to the structure, and to release an amount of the anti-  
20 angiogenic factor.

Within further aspects of the present invention, methods are provided for treating tumor excision sites, comprising administering a polynucleotide, polypeptide, agonist and/or agonist to the resection margins of a tumor subsequent to excision, such that the local recurrence of cancer and the formation of new blood vessels at the  
25 site is inhibited. Within one embodiment of the invention, the anti-angiogenic compound is administered directly to the tumor excision site (e.g., applied by swabbing, brushing or otherwise coating the resection margins of the tumor with the anti-angiogenic compound). Alternatively, the anti-angiogenic compounds may be incorporated into known surgical pastes prior to administration. Within particularly



preferred embodiments of the invention, the anti-angiogenic compounds are applied after hepatic resections for malignancy, and after neurosurgical operations.

Within one aspect of the present invention, polynucleotides, polypeptides, agonists and/or agonists may be administered to the resection margin of a wide variety of tumors, including for example, breast, colon, brain and hepatic tumors. For example, within one embodiment of the invention, anti-angiogenic compounds may be administered to the site of a neurological tumor subsequent to excision, such that the formation of new blood vessels at the site are inhibited.

The polynucleotides, polypeptides, agonists and/or agonists of the present invention may also be administered along with other anti-angiogenic factors. Representative examples of other anti-angiogenic factors include: Anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel, Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo

molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., *Cancer Res.* 51:22-26, 1991); Sulphated Polysaccharide Peptidoglycan Complex (SP- PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., *J. Bio. Chem.* 267:17321-17326, 1992); Chymostatin (Tomkinson et al., *Biochem J.* 286:475-480, 1992); Cyclodextrin Tetradeccasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., *Nature* 348:555-557, 1990); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, *J. Clin. Invest.* 79:1440-1446, 1987); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., *J. Biol. Chem.* 262(4):1659-1664, 1987); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4-chloroanthronilic acid disodium or "CCA"; Takeuchi et al., *Agents Actions* 36:312-316, 1992); Thalidomide; Angostatic steroid; AGM-1470; carboxynaminolimidazole; and metalloproteinase inhibitors such as BB94.

**Diseases at the Cellular Level**

Diseases associated with increased cell survival or the inhibition of apoptosis that could be treated or detected by polynucleotides or polypeptides, as well as antagonists or agonists of the present invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma, breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection. In preferred embodiments, polynucleotides, polypeptides, and/or antagonists of the invention are used to inhibit growth, progression, and/or metasis of cancers, in particular those listed above.

Additional diseases or conditions associated with increased cell survival that could be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma,

lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

Diseases associated with increased apoptosis that could be treated or detected by polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, include AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, Amyotrophic lateral sclerosis, Retinitis pigmentosa, Cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestosis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

#### **Wound Healing and Epithelial Cell Proliferation**

In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate epithelial cell proliferation and basal keratinocytes for the purpose of wound

healing, and to stimulate hair follicle production and healing of dermal wounds. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may be clinically useful in stimulating wound healing including surgical wounds, excisional wounds, deep wounds involving damage of the dermis and epidermis, eye tissue wounds, dental tissue wounds, oral cavity wounds, diabetic ulcers, dermal ulcers, cubitus ulcers, arterial ulcers, venous stasis ulcers, burns resulting from heat exposure or chemicals, and other abnormal wound healing conditions such as uremia, malnutrition, vitamin deficiencies and complications associated with systemic treatment with steroids, radiation therapy and antineoplastic drugs and antimetabolites. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote dermal reestablishment subsequent to dermal loss

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to increase the adherence of skin grafts to a wound bed and to stimulate re-epithelialization from the wound bed. The following are types of grafts that polynucleotides or polypeptides, agonists or antagonists of the present invention, could be used to increase adherence to a wound bed: autografts, artificial skin, allografts, autodermic graft, autoepidermic grafts, avascular grafts, Blair-Brown grafts, bone graft, brephoplastic grafts, cutis graft, delayed graft, dermic graft, epidermic graft, fascia graft, full thickness graft, heterologous graft, xenograft, homologous graft, hyperplastic graft, lamellar graft, mesh graft, mucosal graft, Ollier-Thiersch graft, omentum graft, patch graft, pedicle graft, penetrating graft, split skin graft, thick split graft. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, can be used to promote skin strength and to improve the appearance of aged skin.

It is believed that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, will also produce changes in hepatocyte proliferation, and epithelial cell proliferation in the lung, breast, pancreas, stomach, small intestine, and large intestine. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could promote proliferation of

epithelial cells such as sebocytes, hair follicles, hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the skin, lung, liver, and gastrointestinal tract. Polynucleotides or polypeptides, agonists or antagonists of the present invention, may promote  
5 proliferation of endothelial cells, keratinocytes, and basal keratinocytes.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to reduce the side effects of gut toxicity that result from radiation, chemotherapy treatments or viral infections. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may have a  
10 cytoprotective effect on the small intestine mucosa. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may also stimulate healing of mucositis (mouth ulcers) that result from chemotherapy and viral infections.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could further be used in full regeneration of skin in full and partial  
15 thickness skin defects, including burns, (i.e., repopulation of hair follicles, sweat glands, and sebaceous glands), treatment of other skin defects such as psoriasis. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat epidermolysis bullosa, a defect in adherence of the epidermis to the underlying dermis which results in frequent, open and painful blisters  
20 by accelerating reepithelialization of these lesions. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to treat gastric and duodenal ulcers and help heal by scar formation of the mucosal lining and regeneration of glandular mucosa and duodenal mucosal lining more rapidly. Inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, are  
25 diseases which result in destruction of the mucosal surface of the small or large intestine, respectively. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote the resurfacing of the mucosal surface to aid more rapid healing and to prevent progression of inflammatory bowel disease. Treatment with polynucleotides or polypeptides, agonists or  
30 antagonists of the present invention, is expected to have a significant effect on the

production of mucus throughout the gastrointestinal tract and could be used to protect the intestinal mucosa from injurious substances that are ingested or following surgery. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat diseases associate with the under expression.

5           Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to prevent and heal damage to the lungs due to various pathological states. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, which could stimulate proliferation and differentiation and promote the repair of alveoli and brochiolar epithelium to prevent  
10 or treat acute or chronic lung damage. For example, emphysema, which results in the progressive loss of aveoli, and inhalation injuries, i.e., resulting from smoke inhalation and burns, that cause necrosis of the bronchiolar epithelium and alveoli could be effectively treated using polynucleotides or polypeptides, agonists or antagonists of the present invention. Also, polynucleotides or polypeptides, as well as  
15 agonists or antagonists of the present invention, could be used to stimulate the proliferation of and differentiation of type II pneumocytes, which may help treat or prevent disease such as hyaline membrane diseases, such as infant respiratory distress syndrome and bronchopulmonary displasia, in premature infants.

          Polynucleotides or polypeptides, as well as agonists or antagonists of the  
20 present invention, could stimulate the proliferation and differentiation of hepatocytes and, thus, could be used to alleviate or treat liver diseases and pathologies such as fulminant liver failure caused by cirrhosis, liver damage caused by viral hepatitis and toxic substances (i.e., acetaminophen, carbon tetraholoride and other hepatotoxins known in the art).

25           In addition, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used treat or prevent the onset of diabetes mellitus. In patients with newly diagnosed Types I and II diabetes, where some islet cell function remains, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to maintain the islet function so as to alleviate,  
30 delay or prevent permanent manifestation of the disease. Also, polynucleotides or

polypeptides, as well as agonists or antagonists of the present invention, could be used as an auxiliary in islet cell transplantation to improve or promote islet cell function.

5 **Neurological Diseases**

In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to  
10 stimulate neurological cell proliferation and/or differentiation. Therefore, polynucleotides, polypeptides, agonists and/or antagonists of the invention may be used to treat and/or detect neurologic diseases. Moreover, polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used as a marker or detector of a particular nervous system disease or disorder.

15 Examples of neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include brain diseases, such as metabolic brain diseases which includes phenylketonuria such as maternal phenylketonuria, pyruvate carboxylase deficiency, pyruvate dehydrogenase complex deficiency, Wernicke's Encephalopathy, brain  
20 edema, brain neoplasms such as cerebellar neoplasms which include infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms, supratentorial neoplasms, canavan disease, cerebellar diseases such as cerebellar ataxia which include spinocerebellar degeneration such as ataxia telangiectasia, cerebellar dyssynergia, Friederich's Ataxia, Machado-Joseph  
25 Disease, olivopontocerebellar atrophy, cerebellar neoplasms such as infratentorial neoplasms, diffuse cerebral sclerosis such as encephalitis periaxialis, globoid cell leukodystrophy, metachromatic leukodystrophy and subacute sclerosing panencephalitis, cerebrovascular disorders (such as carotid artery diseases which include carotid artery thrombosis, carotid stenosis and Moyamoya Disease, cerebral  
30 amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and



thrombosis such as carotid artery thrombosis, sinus thrombosis and Wallenberg's Syndrome, cerebral hemorrhage such as epidural hematoma, subdural hematoma and subarachnoid hemorrhage, cerebral infarction, cerebral ischemia such as transient cerebral ischemia, Subclavian Steal Syndrome and vertebrobasilar insufficiency, 5 vascular dementia such as multi-infarct dementia, periventricular leukomalacia, vascular headache such as cluster headache, migraine, dementia such as AIDS Dementia Complex, presenile dementia such as Alzheimer's Disease and Creutzfeldt-Jakob Syndrome, senile dementia such as Alzheimer's Disease and progressive supranuclear palsy, vascular dementia such as multi-infarct dementia, encephalitis 10 which include encephalitis periaxialis, viral encephalitis such as epidemic encephalitis, Japanese Encephalitis, St. Louis Encephalitis, tick-borne encephalitis and West Nile Fever, acute disseminated encephalomyelitis, meningoencephalitis such as uveomeningoencephalitic syndrome, Postencephalitic Parkinson Disease and subacute sclerosing panencephalitis, encephalomalacia such as periventricular 15 leukomalacia, epilepsy such as generalized epilepsy which includes infantile spasms, absence epilepsy, myoclonic epilepsy which includes MERRF Syndrome, tonic-clonic epilepsy, partial epilepsy such as complex partial epilepsy, frontal lobe epilepsy and temporal lobe epilepsy, post-traumatic epilepsy, status epilepticus such as Epilepsia Partialis Continua, Hallervorden-Spatz Syndrome, hydrocephalus such as 20 Dandy-Walker Syndrome and normal pressure hydrocephalus, hypothalamic diseases such as hypothalamic neoplasms, cerebral malaria, narcolepsy which includes cataplexy, bulbar poliomyelitis, cerebri pseudotumor, Rett Syndrome, Reye's Syndrome, thalamic diseases, cerebral toxoplasmosis, intracranial tuberculoma and Zellweger Syndrome, central nervous system infections such as AIDS Dementia 25 Complex, Brain Abscess, subdural empyema, encephalomyelitis such as Equine Encephalomyelitis, Venezuelan Equine Encephalomyelitis, Necrotizing Hemorrhagic Encephalomyelitis, Visna, cerebral malaria, meningitis such as arachnoiditis, aseptic meningitis such as viral meningitis which includes lymphocytic choriomeningitis. Bacterial meningitis which includes Haemophilus Meningitis, Listeria Meningitis, 30 Meningococcal Meningitis such as Waterhouse-Friderichsen Syndrome,

Pneumococcal Meningitis and meningeal tuberculosis, fungal meningitis such as Cryptococcal Meningitis, subdural effusion, meningoencephalitis such as uvemeningoencephalitic syndrome, myelitis such as transverse myelitis, neurosyphilis such as tabes dorsalis, poliomyelitis which includes bulbar poliomyelitis and  
5 postpoliomyelitis syndrome, prion diseases (such as Creutzfeldt-Jakob Syndrome, Bovine Spongiform Encephalopathy, Gerstmann-Straussler Syndrome, Kuru, Scrapie) cerebral toxoplasmosis, central nervous system neoplasms such as brain neoplasms that include cerebellar neoplasms such as infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms and  
10 supratentorial neoplasms, meningeal neoplasms, spinal cord neoplasms which include epidural neoplasms, demyelinating diseases such as Canavan Diseases, diffuse cerebral scleritis which includes adrenoleukodystrophy, encephalitis periaxialis, globoid cell leukodystrophy, diffuse cerebral sclerosis such as metachromatic leukodystrophy, allergic encephalomyelitis, necrotizing hemorrhagic  
15 encephalomyelitis, progressive multifocal leukoencephalopathy, multiple sclerosis, central pontine myelinolysis, transverse myelitis, neuromyelitis optica, Scrapie, Swayback, Chronic Fatigue Syndrome, Visna, High Pressure Nervous Syndrome, Meningism, spinal cord diseases such as amyotonia congenita, amyotrophic lateral sclerosis, spinal muscular atrophy such as Werdnig-Hoffmann Disease, spinal cord  
20 compression, spinal cord neoplasms such as epidural neoplasms, syringomyelia, Tabes Dorsalis, Stiff-Man Syndrome, mental retardation such as Angelman Syndrome, Cri-du-Chat Syndrome, De Lange's Syndrome, Down Syndrome, Gangliosidoses such as gangliosidoses G(M1), Sandhoff Disease, Tay-Sachs Disease, Hartnup Disease, homocystinuria, Laurence-Moon- Biedl Syndrome, Lesch-Nyhan  
25 Syndrome, Maple Syrup Urine Disease, mucopolipidosis such as fucosidosis, neuronal ceroid-lipofuscinosis, oculocerebrorenal syndrome, phenylketonuria such as maternal phenylketonuria, Prader-Willi Syndrome, Rett Syndrome, Rubinstein-Taybi Syndrome, Tuberous Sclerosis, WAGR Syndrome, nervous system abnormalities such as holoprosencephaly, neural tube defects such as anencephaly which includes  
30 hydrangencephaly, Arnold-Chairi Deformity, encephalocele, meningocele,

meningomyelocele, spinal dysraphism such as spina bifida cystica and spina bifida occulta, hereditary motor and sensory neuropathies which include Charcot-Marie Disease, Hereditary optic atrophy, Refsum's Disease, hereditary spastic paraplegia, Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies such

5 as Congenital Analgesia and Familial Dysautonomia, Neurologic manifestations (such as agnosia that include Gerstmann's Syndrome, Amnesia such as retrograde amnesia, apraxia, neurogenic bladder, cataplexy, communicative disorders such as hearing disorders that includes deafness, partial hearing loss, loudness recruitment and tinnitus, language disorders such as aphasia which include agraphia, anomia,

10 broca aphasia, and Wernicke Aphasia, Dyslexia such as Acquired Dyslexia, language development disorders, speech disorders such as aphasia which includes anomia, broca aphasia and Wernicke Aphasia, articulation disorders, communicative disorders such as speech disorders which include dysarthria, echolalia, mutism and stuttering, voice disorders such as aphonia and hoarseness, decerebrate state, delirium,

15 fasciculation, hallucinations, meningism, movement disorders such as angelman syndrome, ataxia, athetosis, chorea, dystonia, hypokinesia, muscle hypotonia, myoclonus, tic, torticollis and tremor, muscle hypertonia such as muscle rigidity such as stiff-man syndrome, muscle spasticity, paralysis such as facial paralysis which includes Herpes Zoster Oticus, Gastroparesis, Hemiplegia, ophthalmoplegia such as

20 diplopia, Duane's Syndrome, Horner's Syndrome, Chronic progressive external ophthalmoplegia such as Kearns Syndrome, Bulbar Paralysis, Tropical Spastic Paraparesis, Paraplegia such as Brown-Sequard Syndrome, quadriplegia, respiratory paralysis and vocal cord paralysis, paresis, phantom limb, taste disorders such as ageusia and dysgeusia, vision disorders such as amblyopia, blindness, color vision

25 defects, diplopia, hemianopsia, scotoma and subnormal vision, sleep disorders such as hypersomnia which includes Kleine-Levin Syndrome, insomnia, and somnambulism, spasm such as trismus, unconsciousness such as coma, persistent vegetative state and syncope and vertigo, neuromuscular diseases such as amyotonia congenita, amyotrophic lateral sclerosis, Lambert-Eaton Myasthenic Syndrome, motor neuron

30 disease, muscular atrophy such as spinal muscular atrophy, Charcot-Marie Disease

and Werdnig-Hoffmann Disease, Postpoliomyelitis Syndrome, Muscular Dystrophy, Myasthenia Gravis, Myotonia Atrophica, Myotonia Confenita, Nemaline Myopathy, Familial Periodic Paralysis, Multiplex Paramyoclonus, Tropical Spastic Paraparesis and Stiff-Man Syndrome, peripheral nervous system diseases such as acrodynia, amyloid neuropathies, autonomic nervous system diseases such as Adie's Syndrome, Barre-Lieou Syndrome, Familial Dysautonomia, Horner's Syndrome, Reflex Sympathetic Dystrophy and Shy-Drager Syndrome, Cranial Nerve Diseases such as Acoustic Nerve Diseases such as Acoustic Neuroma which includes Neurofibromatosis 2, Facial Nerve Diseases such as Facial Neuralgia, Melkersson-Rosenthal Syndrome, ocular motility disorders which includes amblyopia, nystagmus, oculomotor nerve paralysis, ophthalmoplegia such as Duane's Syndrome, Horner's Syndrome, Chronic Progressive External Ophthalmoplegia which includes Kearns Syndrome, Strabismus such as Esotropia and Exotropia, Oculomotor Nerve Paralysis, Optic Nerve Diseases such as Optic Atrophy which includes Hereditary Optic Atrophy, Optic Disk Drusen, Optic Neuritis such as Neuromyelitis Optica, Papilledema, Trigeminal Neuralgia, Vocal Cord Paralysis, Demyelinating Diseases such as Neuromyelitis Optica and Swayback, Diabetic neuropathies such as diabetic foot, nerve compression syndromes such as carpal tunnel syndrome, tarsal tunnel syndrome, thoracic outlet syndrome such as cervical rib syndrome, ulnar nerve compression syndrome, neuralgia such as causalgia, cervico-brachial neuralgia, facial neuralgia and trigeminal neuralgia, neuritis such as experimental allergic neuritis, optic neuritis, polyneuritis, polyradiculoneuritis and radiculities such as polyradiculitis, hereditary motor and sensory neuropathies such as Charcot-Marie Disease, Hereditary Optic Atrophy, Refsum's Disease, Hereditary Spastic Paraplegia and Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies which include Congenital Analgesia and Familial Dysautonomia, POEMS Syndrome, Sciatica, Gustatory Sweating and Tetany).

### **Infectious Disease**

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to treat or detect infectious agents. For example, by increasing the immune response, particularly increasing the proliferation and differentiation of B and/or T cells, infectious diseases may be treated. The immune  
5 response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may also directly inhibit the infectious agent, without necessarily eliciting an immune response.

Viruses are one example of an infectious agent that can cause disease or  
10 symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention. Examples of viruses, include, but are not limited to Examples of viruses, include, but are not limited to the following DNA and RNA viruses and viral families: Arbovirus, Adenoviridae, Arenaviridae, Arterivirus, Birnaviridae, Bunyaviridae, Caliciviridae, Circoviridae, Coronaviridae,  
15 Dengue, EBV, HIV, Flaviviridae, Hepadnaviridae (Hepatitis), Herpesviridae (such as, Cytomegalovirus, Herpes Simplex, Herpes Zoster), Mononegavirus (e.g., Paramyxoviridae, Morbillivirus, Rhabdoviridae), Orthomyxoviridae (e.g., Influenza A, Influenza B, and parainfluenza), Papiloma virus, Papovaviridae, Parvoviridae, Picornaviridae, Poxviridae (such as Smallpox or Vaccinia), Reoviridae (e.g.,  
20 Rotavirus), Retroviridae (HTLV-I, HTLV-II, Lentivirus), and Togaviridae (e.g., Rubivirus). Viruses falling within these families can cause a variety of diseases or symptoms, including, but not limited to: arthritis, bronchiollitis, respiratory syncytial virus, encephalitis, eye infections (e.g., conjunctivitis, keratitis), chronic fatigue syndrome, hepatitis (A, B, C, E, Chronic Active, Delta), Japanese B encephalitis,  
25 Junin, Chikungunya, Rift Valley fever, yellow fever, meningitis, opportunistic infections (e.g., AIDS), pneumonia, Burkitt's Lymphoma, chickenpox, hemorrhagic fever, Measles, Mumps, Parainfluenza, Rabies, the common cold, Polio, leukemia, Rubella, sexually transmitted diseases, skin diseases (e.g., Kaposi's, warts), and viremia. polynucleotides or polypeptides, or agonists or antagonists of the invention,  
30 can be used to treat or detect any of these symptoms or diseases. In specific

embodiments, polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat: meningitis, Dengue, EBV, and/or hepatitis (e.g., hepatitis B). In an additional specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat patients nonresponsive to one or more  
5 other commercially available hepatitis vaccines. In a further specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat AIDS.

Similarly, bacterial or fungal agents that can cause disease or symptoms and that can be treated or detected by a polynucleotide or polypeptide and/or agonist or  
10 antagonist of the present invention include, but not limited to, include, but not limited to, the following Gram-Negative and Gram-positive bacteria and bacterial families and fungi: Actinomycetales (e.g., Corynebacterium, Mycobacterium, Norcardia), Cryptococcus neoformans, Aspergillosis, Bacillaceae (e.g., Anthrax, Clostridium), Bacteroidaceae, Blastomycosis, Bordetella, Borrelia (e.g., Borrelia burgdorferi,  
15 Brucellosis, Candidiasis, Campylobacter, Coccidioidomycosis, Cryptococcosis, Dermatocycoses, E. coli (e.g., Enterotoxigenic E. coli and Enterohemorrhagic E. coli), Enterobacteriaceae (Klebsiella, Salmonella (e.g., Salmonella typhi, and Salmonella paratyphi), Serratia, Yersinia), Erysipelothrix, Helicobacter, Legionellosis, Leptospirosis, Listeria, Mycoplasmatales, Mycobacterium leprae,  
20 Vibrio cholerae, Neisseriaceae (e.g., Acinetobacter, Gonorrhea, Meningococcal), Meisseria meningitidis, Pasteurellacea Infections (e.g., Actinobacillus, Heamophilus (e.g., Heamophilus influenza type B), Pasteurella), Pseudomonas, Rickettsiaceae, Chlamydiaceae, Syphilis, Shigella spp., Staphylococcal, Meningiococcal, Pneumococcal and Streptococcal (e.g., Streptococcus pneumoniae and Group B  
25 Streptococcus). These bacterial or fungal families can cause the following diseases or symptoms, including, but not limited to: bacteremia, endocarditis, eye infections (conjunctivitis, tuberculosis, uveitis), gingivitis, opportunistic infections (e.g., AIDS related infections), paronychia, prosthesis-related infections, Reiter's Disease, respiratory tract infections, such as Whooping Cough or Empyema, sepsis, Lyme  
30 Disease, Cat-Scratch Disease, Dysentery, Paratyphoid Fever, food poisoning,

Typhoid, pneumonia, Gonorrhea, meningitis (e.g., meningitis types A and B), Chlamydia, Syphilis, Diphtheria, Leprosy, Paratuberculosis, Tuberculosis, Lupus, Botulism, gangrene, tetanus, impetigo, Rheumatic Fever, Scarlet Fever, sexually transmitted diseases, skin diseases (e.g., cellulitis, dermatocycoses), toxemia, urinary tract infections, wound infections. Polynucleotides or polypeptides, agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, agonists or antagonists of the invention are used to treat: tetanus, Diphtheria, botulism, and/or meningitis type B.

Moreover, parasitic agents causing disease or symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following families or class: Amebiasis, Babesiosis, Coccidiosis, Cryptosporidiosis, Dientamoebiasis, Dourine, Ectoparasitic, Giardiasis, Helminthiasis, Leishmaniasis, Theileriasis, Toxoplasmosis, Trypanosomiasis, and Trichomonas and Sporozoans (e.g., Plasmodium virax, Plasmodium falciparum, Plasmodium malariae and Plasmodium ovale). These parasites can cause a variety of diseases or symptoms, including, but not limited to: Scabies, Trombiculiasis, eye infections, intestinal disease (e.g., dysentery, giardiasis), liver disease, lung disease, opportunistic infections (e.g., AIDS related), malaria, pregnancy complications, and toxoplasmosis. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could either be by administering an effective amount of a polypeptide to the patient, or by removing cells from the patient, supplying the cells with a polynucleotide of the present invention, and returning the engineered cells to the patient (ex vivo therapy). Moreover, the polypeptide or polynucleotide of the present invention can be used as an antigen in a vaccine to raise an immune response against infectious disease.

**Regeneration**

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to differentiate, proliferate, and attract cells, leading to the regeneration of tissues. (See, Science 276:59-87 (1997).) The regeneration of  
5 tissues could be used to repair, replace, or protect tissue damaged by congenital defects, trauma (wounds, burns, incisions, or ulcers), age, disease (e.g. osteoporosis, osteoarthritis, periodontal disease, liver failure), surgery, including cosmetic plastic surgery, fibrosis, reperfusion injury, or systemic cytokine damage.

Tissues that could be regenerated using the present invention include organs  
10 (e.g., pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac), vasculature (including vascular and lymphatics), nervous, hematopoietic, and skeletal (bone, cartilage, tendon, and ligament) tissue. Preferably, regeneration occurs without or decreased scarring. Regeneration also may include angiogenesis.

Moreover, polynucleotides or polypeptides, as well as agonists or antagonists  
15 of the present invention, may increase regeneration of tissues difficult to heal. For example, increased tendon/ligament regeneration would quicken recovery time after damage. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could also be used prophylactically in an effort to avoid damage. Specific diseases that could be treated include of tendinitis, carpal tunnel syndrome,  
20 and other tendon or ligament defects. A further example of tissue regeneration of non-healing wounds includes pressure ulcers, ulcers associated with vascular insufficiency, surgical, and traumatic wounds.

Similarly, nerve and brain tissue could also be regenerated by using  
polynucleotides or polypeptides, as well as agonists or antagonists of the present  
25 invention, to proliferate and differentiate nerve cells. Diseases that could be treated using this method include central and peripheral nervous system diseases, neuropathies, or mechanical and traumatic disorders (e.g., spinal cord disorders, head trauma, cerebrovascular disease, and stroke). Specifically, diseases associated with peripheral nerve injuries, peripheral neuropathy (e.g., resulting from chemotherapy or  
30 other medical therapies), localized neuropathies, and central nervous system diseases



(e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome), could all be treated using the polynucleotides or polypeptides, as well as agonists or antagonists of the present invention.

5

### **Chemotaxis**

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may have chemotaxis activity. A chemotactic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells) to a particular site in the body, such as inflammation, infection, or site of hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may increase chemotactic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotactic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

It is also contemplated that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may inhibit chemotactic activity. These molecules could also be used to treat disorders. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could be used as an inhibitor of chemotaxis.

### **Binding Activity**

A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit

(antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors), or small molecules.

Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5 (1991).) Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide. Preferred cells include cells from mammals, yeast, *Drosophila*, or *E. coli*. Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.

The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.

Alternatively, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g., biological sample) using a monoclonal or polyclonal antibody. The antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

Additionally, the receptor to which the polypeptide of the present invention binds can be identified by numerous methods known to those of skill in the art, for example, ligand panning and FACS sorting (Coligan, et al., Current Protocols in Immun., 1(2), Chapter 5, (1991)). For example, expression cloning is employed  
5 wherein polyadenylated RNA is prepared from a cell responsive to the polypeptides, for example, NIH3T3 cells which are known to contain multiple receptors for the FGF family proteins, and SC-3 cells, and a cDNA library created from this RNA is divided into pools and used to transfect COS cells or other cells that are not responsive to the polypeptides. Transfected cells which are grown on glass slides are  
10 exposed to the polypeptide of the present invention, after they have been labelled. The polypeptides can be labeled by a variety of means including iodination or inclusion of a recognition site for a site-specific protein kinase.

Following fixation and incubation, the slides are subjected to auto-radiographic analysis. Positive pools are identified and sub-pools are prepared and  
15 re-transfected using an iterative sub-pooling and re-screening process, eventually yielding a single clones that encodes the putative receptor.

As an alternative approach for receptor identification, the labeled polypeptides can be photoaffinity linked with cell membrane or extract preparations that express the receptor molecule. Cross-linked material is resolved by PAGE analysis and  
20 exposed to X-ray film. The labeled complex containing the receptors of the polypeptides can be excised, resolved into peptide fragments, and subjected to protein microsequencing. The amino acid sequence obtained from microsequencing would be used to design a set of degenerate oligonucleotide probes to screen a cDNA library to identify the genes encoding the putative receptors.

Moreover, the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling") may be employed to modulate the activities of the polypeptide of the present invention thereby effectively generating agonists and antagonists of the polypeptide of the present invention. *See generally*, U.S. Patent Nos. 5,605,793, 5,811,238, 5,830,721,  
25 5,834,252, and 5,837,458, and Patten, P. A., et al., *Curr. Opinion Biotechnol.* 8:724-  
30

33 (1997); Harayama, S. *Trends Biotechnol.* 16(2):76-82 (1998); Hansson, L. O., *et al.*, *J. Mol. Biol.* 287:265-76 (1999); and Lorenzo, M. M. and Blasco, R. *Biotechniques* 24(2):308-13 (1998) (each of these patents and publications are hereby incorporated by reference). In one embodiment, alteration of polynucleotides and  
5 corresponding polypeptides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments into a desired molecule by homologous, or site-specific, recombination. In another embodiment, polynucleotides and corresponding polypeptides may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior  
10 to recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of the polypeptide of the present invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules. In preferred embodiments, the heterologous molecules are family members. In further preferred embodiments,  
15 the heterologous molecule is a growth factor such as, for example, platelet-derived growth factor (PDGF), insulin-like growth factor (IGF-I), transforming growth factor (TGF)-alpha, epidermal growth factor (EGF), fibroblast growth factor (FGF), TGF-beta, bone morphogenetic protein (BMP)-2, BMP-4, BMP-5, BMP-6, BMP-7, activins A and B, decapentaplegic(dpp), 60A, OP-2, dorsalin, growth differentiation  
20 factors (GDFs), nodal, MIS, inhibin-alpha, TGF-beta1, TGF-beta2, TGF-beta3, TGF-beta5, and glial-derived neurotrophic factor (GDNF).

Other preferred fragments are biologically active fragments of the polypeptide of the present invention. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present  
25 invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

Additionally, this invention provides a method of screening compounds to identify those which modulate the action of the polypeptide of the present invention. An example of such an assay comprises combining a mammalian fibroblast cell, a the  
30 polypeptide of the present invention, the compound to be screened and  $^3\text{[H]}$

thymidine under cell culture conditions where the fibroblast cell would normally proliferate. A control assay may be performed in the absence of the compound to be screened and compared to the amount of fibroblast proliferation in the presence of the compound to determine if the compound stimulates proliferation by determining the uptake of  $^3\text{[H]}$  thymidine in each case. The amount of fibroblast cell proliferation is measured by liquid scintillation chromatography which measures the incorporation of  $^3\text{[H]}$  thymidine. Both agonist and antagonist compounds may be identified by this procedure.

In another method, a mammalian cell or membrane preparation expressing a receptor for a polypeptide of the present invention is incubated with a labeled polypeptide of the present invention in the presence of the compound. The ability of the compound to enhance or block this interaction could then be measured. Alternatively, the response of a known second messenger system following interaction of a compound to be screened and the receptor is measured and the ability of the compound to bind to the receptor and elicit a second messenger response is measured to determine if the compound is a potential agonist or antagonist. Such second messenger systems include but are not limited to, cAMP guanylate cyclase, ion channels or phosphoinositide hydrolysis.

All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptides of the invention from suitably manipulated cells or tissues.

Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the present invention; and (b) determining if binding has occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the present invention, (b) assaying a biological

activity, and (b) determining if a biological activity of the polypeptide has been altered.

### **Targeted Delivery**

5           In another embodiment, the invention provides a method of delivering compositions to targeted cells expressing a receptor for a polypeptide of the invention, or cells expressing a cell bound form of a polypeptide of the invention.

          As discussed herein, polypeptides or antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or  
10       prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (including antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic  
15       protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

          In another embodiment, the invention provides a method for the specific  
20       destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention (e.g., polypeptides of the invention or antibodies of the invention) in association with toxins or cytotoxic prodrugs.

          By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of  
25       toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced  
30       endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha

toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used  
5 according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubisin, and phenoxyacetamide derivatives of doxorubicin.

#### 10 Drug Screening

Further contemplated is the use of the polypeptides of the present invention, or the polynucleotides encoding these polypeptides, to screen for molecules which modify the activities of the polypeptides of the present invention. Such a method would include contacting the polypeptide of the present invention with a selected  
15 compound(s) suspected of having antagonist or agonist activity, and assaying the activity of these polypeptides following binding.

This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the present invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in  
20 such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation  
25 of complexes between the agent being tested and a polypeptide of the present invention.

Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the present invention. These methods comprise contacting such an agent with a polypeptide of  
30 the present invention or a fragment thereof and assaying for the presence of a

complex between the agent and the polypeptide or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the present invention.

Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the present invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is incorporated herein by reference herein. Briefly stated, large numbers of different small peptide test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The peptide test compounds are reacted with polypeptides of the present invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the present invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

#### **Antisense And Ribozyme (Antagonists)**

In specific embodiments, antagonists according to the present invention are nucleic acids corresponding to the sequences contained in SEQ ID NO:X, or the complementary strand thereof, and/or to nucleotide sequences contained in the cDNA contained in the related cDNA clone identified in Table 1. In one embodiment, antisense sequence is generated internally, by the organism, in another embodiment, the antisense sequence is separately administered (see, for example, O'Connor, J.,



Neurochem. 56:560 (1991). Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Antisense technology can be used to control gene expression through antisense DNA or RNA, or through triple-helix formation. Antisense techniques are discussed for example, in Okano, J., Neurochem. 56:560 (1991); Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance, Lee et al., Nucleic Acids Research 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1300 (1991). The methods are based on binding of a polynucleotide to a complementary DNA or RNA.

10 For example, the use of c-myc and c-myb antisense RNA constructs to inhibit the growth of the non-lymphocytic leukemia cell line HL-60 and other cell lines was previously described. (Wickstrom et al. (1988); Anfossi et al. (1989)). These experiments were performed in vitro by incubating cells with the oligoribonucleotide. A similar procedure for in vivo use is described in WO 91/15580. Briefly, a pair of  
15 oligonucleotides for a given antisense RNA is produced as follows: A sequence complimentary to the first 15 bases of the open reading frame is flanked by an EcoRI site on the 5' end and a HindIII site on the 3' end. Next, the pair of oligonucleotides is heated at 90°C for one minute and then annealed in 2X ligation buffer (20mM TRIS HCl pH 7.5, 10mM MgCl<sub>2</sub>, 10mM dithiothreitol (DTT) and 0.2 mM ATP) and  
20 then ligated to the EcoRI/Hind III site of the retroviral vector PMV7 (WO 91/15580).

For example, the 5' coding portion of a polynucleotide that encodes the polypeptide of the present invention may be used to design an antisense RNA oligonucleotide of from about 10 to 40 base pairs in length. A DNA oligonucleotide is designed to be complementary to a region of the gene involved in transcription  
25 thereby preventing transcription and the production of the receptor. The antisense RNA oligonucleotide hybridizes to the mRNA in vivo and blocks translation of the mRNA molecule into receptor polypeptide.

In one embodiment, the antisense nucleic acid of the invention is produced intracellularly by transcription from an exogenous sequence. For example, a vector or  
30 a portion thereof, is transcribed, producing an antisense nucleic acid (RNA) of the

invention. Such a vector would contain a sequence encoding the antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors  
5 can be plasmid, viral, or others known in the art, used for replication and expression in vertebrate cells. Expression of the sequence encoding the polypeptide of the present invention or fragments thereof, can be by any promoter known in the art to act in vertebrate, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include, but are not limited to, the SV40 early promoter  
10 region (Berthouille and Chambon, Nature 29:304-310 (1981)), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto et al., Cell 22:787-797 (1980)), the herpes thymidine promoter (Wagner et al., Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445 (1981)), the regulatory sequences of the metallothionein gene (Brinster, et al., Nature 296:39-42 (1982)), etc.

15 The antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a gene of the present invention. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the  
20 RNA, forming a stable duplex; in the case of double stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the larger the hybridizing nucleic acid, the more base mismatches with a RNA it may contain and still form a  
25 stable duplex (or triplex as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

Oligonucleotides that are complementary to the 5' end of the message, e.g., the  
30 5' untranslated sequence up to and including the AUG initiation codon, should work most efficiently at inhibiting translation. However, sequences complementary to the

3' untranslated sequences of mRNAs have been shown to be effective at inhibiting translation of mRNAs as well. See generally, Wagner, R., 1994, *Nature* 372:333-335. Thus, oligonucleotides complementary to either the 5'- or 3'- non- translated, non-coding regions of polynucleotide sequences described herein could be used in an antisense approach to inhibit translation of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are less efficient inhibitors of translation but could be used in accordance with the invention. Whether designed to hybridize to the 5'-, 3'- or coding region of mRNA of the present invention, antisense nucleic acids should be at least six nucleotides in length, and are preferably oligonucleotides ranging from 6 to about 50 nucleotides in length. In specific aspects the oligonucleotide is at least 10 nucleotides, at least 17 nucleotides, at least 25 nucleotides or at least 50 nucleotides.

The polynucleotides of the invention can be DNA or RNA or chimeric mixtures or derivatives or modified versions thereof, single-stranded or double-stranded. The oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, *Proc. Natl. Acad. Sci. U.S.A.* 86:6553-6556; Lemaitre et al., 1987, *Proc. Natl. Acad. Sci.* 84:648-652; PCT Publication No. WO88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO89/10134, published April 25, 1988), hybridization-triggered cleavage agents. (See, e.g., Krol et al., 1988, *BioTechniques* 6:958-976) or intercalating agents. (See, e.g., Zon, 1988, *Pharm. Res.* 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including, but not limited to, 5-fluorouracil,

5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxymethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 5 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxymethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, 10 queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including, but not limited to, arabinose, 15 2-fluoroarabinose, xylulose, and hexose.

In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group including, but not limited to, a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a 20 phosphoramidate, a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

In yet another embodiment, the antisense oligonucleotide is an a-anomeric oligonucleotide. An a-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual b-units, the strands 25 run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-O-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

Polynucleotides of the invention may be synthesized by standard methods 30 known in the art, e.g. by use of an automated DNA synthesizer (such as are

commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin et al., 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

While antisense nucleotides complementary to the coding region sequence could be used, those complementary to the transcribed untranslated region are most preferred.

Potential antagonists according to the invention also include catalytic RNA, or a ribozyme (See, e.g., PCT International Publication WO 90/11364, published October 4, 1990; Sarver et al, Science 247:1222-1225 (1990). While ribozymes that cleave mRNA at site specific recognition sequences can be used to destroy mRNAs, the use of hammerhead ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of hammerhead ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, Nature 334:585-591 (1988). There are numerous potential hammerhead ribozyme cleavage sites within the nucleotide sequence of SEQ ID NO:X. Preferably, the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA transcripts.

As in the antisense approach, the ribozymes of the invention can be composed of modified oligonucleotides (e.g. for improved stability, targeting, etc.) and should be delivered to cells which express in vivo. DNA constructs encoding the ribozyme may be introduced into the cell in the same manner as described above for the introduction of antisense encoding DNA. A preferred method of delivery involves using a DNA construct "encoding" the ribozyme under the control of a strong constitutive promoter, such as, for example, pol III or pol II promoter, so that transfected cells will produce sufficient quantities of the ribozyme to destroy

endogenous messages and inhibit translation. Since ribozymes unlike antisense molecules, are catalytic, a lower intracellular concentration is required for efficiency.

Antagonist/agonist compounds may be employed to inhibit the cell growth and proliferation effects of the polypeptides of the present invention on neoplastic  
5 cells and tissues, i.e. stimulation of angiogenesis of tumors, and, therefore, retard or prevent abnormal cellular growth and proliferation, for example, in tumor formation or growth.

The antagonist/agonist may also be employed to prevent hyper-vascular diseases, and prevent the proliferation of epithelial lens cells after extracapsular  
10 cataract surgery. Prevention of the mitogenic activity of the polypeptides of the present invention may also be desirable in cases such as restenosis after balloon angioplasty.

The antagonist/agonist may also be employed to prevent the growth of scar tissue during wound healing.

15 The antagonist/agonist may also be employed to treat the diseases described herein.

Thus, the invention provides a method of treating disorders or diseases, including but not limited to the disorders or diseases listed throughout this application, associated with overexpression of a polynucleotide of the present  
20 invention by administering to a patient (a) an antisense molecule directed to the polynucleotide of the present invention, and/or (b) a ribozyme directed to the polynucleotide of the present invention.

#### **Other Activities**

25 A polypeptide, polynucleotide, agonist, or antagonist of the present invention, as a result of the ability to stimulate vascular endothelial cell growth, may be employed in treatment for stimulating re-vascularization of ischemic tissues due to various disease conditions such as thrombosis, arteriosclerosis, and other cardiovascular conditions. The polypeptide, polynucleotide, agonist, or antagonist of

the present invention may also be employed to stimulate angiogenesis and limb regeneration, as discussed above.

5 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for treating wounds due to injuries, burns, post-operative tissue repair, and ulcers since they are mitogenic to various cells of different origins, such as fibroblast cells and skeletal muscle cells, and therefore, facilitate the repair or replacement of damaged or diseased tissue.

10 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed stimulate neuronal growth and to treat and prevent neuronal damage which occurs in certain neuronal disorders or neuro-degenerative conditions such as Alzheimer's disease, Parkinson's disease, and AIDS-related complex. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may have the ability to stimulate chondrocyte growth, therefore, they may be employed to enhance bone and periodontal regeneration and aid in tissue transplants or bone grafts.

15 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be also be employed to prevent skin aging due to sunburn by stimulating keratinocyte growth.

20 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for preventing hair loss, since FGF family members activate hair-forming cells and promotes melanocyte growth. Along the same lines, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be employed to stimulate growth and differentiation of hematopoietic cells and bone marrow cells when used in combination with other cytokines.

25 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to maintain organs before transplantation or for supporting cell culture of primary tissues. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for inducing tissue of mesodermal origin to differentiate in early embryos.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.

5 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used to modulate mammalian characteristics, such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of  
10 energy.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, circadian rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or  
15 Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals,  
20 cofactors or other nutritional components.

The above-recited applications have uses in a wide variety of hosts. Such hosts include, but are not limited to, human, murine, rabbit, goat, guinea pig, camel, horse, mouse, rat, hamster, pig, micro-pig, chicken, goat, cow, sheep, dog, cat, non-human primate, and human. In specific embodiments, the host is a mouse, rabbit,  
25 goat, guinea pig, chicken, rat, hamster, pig, sheep, dog or cat. In preferred embodiments, the host is a mammal. In most preferred embodiments, the host is a human.

#### **Other Preferred Embodiments**



Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of SEQ ID NO:X in the range of positions identified as "Start" and "End" in columns 7 and 8 as defined for SEQ ID NO:X in Table 1.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of SEQ ID NO:X in the range of positions identified as "Start" and "End" in columns 7 and 8 as defined for SEQ ID NO:X in Table 1.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, and/or the cDNA in

the related cDNA clone contained in the deposit, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide sequence consisting of only A residues or of only T residues.

5 Also preferred is a composition of matter comprising a DNA molecule which comprises a cDNA clone contained in the deposit.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in the nucleotide sequence of the cDNA in the related cDNA clone  
10 contained in the deposit.

Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of an open reading frame sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

15 Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is an isolated nucleic acid molecule  
20 comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete  
25 nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence  
30 selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the

complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining whether the sequence of  
5 said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence  
10 selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

15 A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the  
20 complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit.

Also preferred is the above method for identifying the species, tissue or cell type of a biological sample which comprises a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide  
25 sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleotide sequence of SEQ ID NO:X; or the cDNA in the related cDNA clone identified in Table 1 which encodes a  
30 protein, wherein the method comprises a step of detecting in a biological sample

obtained from said subject nucleic acid molecules, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide  
5 sequence of the cDNA in the related cDNA clone contained in the deposit.

Also preferred is the above method for diagnosing a pathological condition which comprises a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous  
10 nucleotides in a sequence selected from said group.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a  
15 sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the related cDNA clone contained in the deposit. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is a composition of matter comprising isolated nucleic acid  
20 molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a DNA microarray or "chip" of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 100, 150, 200, 250, 300, 500, 1000, 2000, 3000 or 4000 nucleotide sequences, wherein at least one sequence in said DNA microarray or "chip" is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected  
25 from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; and a nucleotide sequence encoded by the cDNA in the cDNA clone referenced in Table 1. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is an isolated polypeptide comprising an amino acid sequence  
30 at least 90% identical to a sequence of at least about 10 contiguous amino acids in the

polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Also preferred is an isolated polypeptide comprising an amino acid sequence  
5 at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid  
10 sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid  
15 sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and/or a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is an isolated polypeptide comprising an amino acid  
20 sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Also preferred is a polypeptide wherein said sequence of contiguous amino  
acids is included in the amino acid sequence of a portion of said polypeptide encoded by the cDNA clone referenced in Table 1; a polypeptide encoded by SEQ ID NO:X;  
25 and/or the polypeptide sequence of SEQ ID NO:Y.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table 1.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table I.

5 Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the amino acid sequence of a polypeptide encoded by the cDNA clone referenced in Table I.

Further preferred is an isolated antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a  
10 sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone contained in the deposit.

Further preferred is a method for detecting in a biological sample a  
15 polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table I; which method comprises a step of comparing an amino acid  
20 sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining whether the sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.

Also preferred is the above method wherein said step of comparing an amino  
25 acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a  
30 polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X;

and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is the above method for identifying the species, tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleic acid sequence identified in Table 1 encoding a polypeptide, which method comprises a step of detecting in a biological sample obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said polypeptide comprises an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence  
5 selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said  
10 polypeptide in a prokaryotic host.

Also preferred is an isolated nucleic acid molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1.

15 Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector produced by this method. Also preferred is a method of making a recombinant host cell comprising introducing the vector into a host cell, as well as the recombinant host cell produced by this method.

20 Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a human protein comprising an amino acid sequence selected from  
25 the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X; and a polypeptide encoded by the cDNA in the related cDNA clone referenced in Table 1. The isolated polypeptide produced by this method is also preferred.

Also preferred is a method of treatment of an individual in need of an  
30 increased level of a protein activity, which method comprises administering to such



an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to increase the level of said protein activity in said individual.

- 5           Also preferred is a method of treatment of an individual in need of a decreased level of a protein activity, which method comprised administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to decrease the level of
- 10   said protein activity in said individual.

          Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

*Examples**Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample*

5 Each deposited cDNA clone is contained in a plasmid vector. Table 5 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The following correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a  
 10 particular clone is identified in Table 5 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

	<u>Vector Used to Construct Library</u>	<u>Corresponding Deposited Plasmid</u>
	Lambda Zap	pBluescript (pBS)
	Uni-Zap XR	pBluescript (pBS)
15	Zap Express	pBK
	lafmid BA	plafmid BA
	pSport1	pSport1
	pCMVSPORT 2.0	pCMVSPORT 2.0
	pCMVSPORT 3.0	pCMVSPORT 3.0
20	pCR <sup>®</sup> 2.1	pCR <sup>®</sup> 2.1

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 25 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS. The S and K refers to the orientation of the polylinker to the T7 and T3  
 30

primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker). "+" or "-" refer to the orientation of the f1 origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the f1 ori generates sense strand DNA and in the other, antisense.

Vectors pSportI, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into E. coli strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993).) Vector lacmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into E. coli strain XL-1 Blue. Vector pCR<sup>®</sup>2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into E. coli strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the phage vector sequences identified for the particular clone in Table 5, as well as the corresponding plasmid vector sequences designated above.

The deposited material in the sample assigned the ATCC Deposit Number cited by reference to Table 2 and 5 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each cDNA clone referenced in Table 1.

**TABLE 5**

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKF HUKG	Human Uterine Cancer	Lambda ZAP II	LP01
HCNA HCNB	Human Colon	Lambda Zap II	LP01
HFFA	Human Fetal Brain, random primed	Lambda Zap II	LP01
HTWA	Resting T-Cell	Lambda ZAP II	LP01
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP01
HLMB HLMF HLMG HLMH HLMJ HLMJ HLMN	breast lymph node CDNA library	Lambda ZAP II	LP01
HCQA HCQB	human colon cancer	Lambda ZAP II	LP01
HMEA HMEC HMED HMEF HMEG HMEI HMEJ HMEK HMEI	Human Microvascular Endothelial Cells, fract. A	Lambda ZAP II	LP01
HUSA HUSC	Human Umbilical Vein Endothelial Cells, fract. A	Lambda ZAP II	LP01
HLQA HLQB	Hepatocellular Tumor	Lambda ZAP II	LP01
HHGA HHGB HHGC HHGD	Hemangiopericytoma	Lambda ZAP II	LP01
HSDM	Human Striatum Depression, re-rescue	Lambda ZAP II	LP01
HUSH	H Umbilical Vein Endothelial Cells, frac A, re-excision	Lambda ZAP II	LP01
HSGS	Salivary gland, subtracted	Lambda ZAP II	LP01
HFXA HFXB HFXC HFXD HFXE HFXF HFXG HFXH	Brain frontal cortex	Lambda ZAP II	LP01
HPQA HPQB HPQC	PERM TF274	Lambda ZAP II	LP01
HFXJ HFXK	Brain Frontal Cortex, re-excision	Lambda ZAP II	LP01
HCWA HCWB HCWC HCWD HCWE HCWF HCWG HCWH HCWI HCWJ HCWK	CD34 positive cells (Cord Blood)	ZAP Express	LP02
HCUA HCUB HCUC	CD34 depleted Buffy Coat (Cord Blood)	ZAP Express	LP02
HRSM	A-14 cell line	ZAP Express	LP02
HRSA	A1-CELL LINE	ZAP Express	LP02
HCUD HCUE HCUF HCUG HCUH HCUI	CD34 depleted Buffy Coat (Cord Blood), re-excision	ZAP Express	LP02
HBXE HBXF HBXG	H. Whole Brain #2, re-excision	ZAP Express	LP02
HRLM	L8 cell line	ZAP Express	LP02
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP02
HUDA HUDB HUDC	Testes	ZAP Express	LP02
HHTM HHTN HHTO	H. hypothalamus, frac A; re-excision	ZAP Express	LP02
HHTL	H. hypothalamus, frac A	ZAP Express	LP02
HASA HASD	Human Adult Spleen	Uni-ZAP XR	LP03
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP03
HE8A HE8B HE8C HE8D HE8E HE8F HE8M HE8N	Human 8 Week Whole Embryo	Uni-ZAP XR	LP03
HGBA HGBD HGBE HGBF HGBG HGBH HGBI	Human Gall Bladder	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HLHA HLHB HLHC HLHD HLHE HLHF HLHG HLHH HLHQ	Human Fetal Lung III	Uni-ZAP XR	LP03
HPMA HPMB HPMC HPMD HPME HPMF HPMG HPMH	Human Placenta	Uni-ZAP XR	LP03
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP03
HSIA HSIC HSID HSIE	Human Adult Small Intestine	Uni-ZAP XR	LP03
HTEA HTEB HTEC HTED HTEE HTEF HTEG HTEH HTEI HTEJ HTEK	Human Testes	Uni-ZAP XR	LP03
HTPA HTPB HTPC HTPD HTPF	Human Pancreas Tumor	Uni-ZAP XR	LP03
HTTA HTTB HTTC HTTD HTTE HTTF	Human Testes Tumor	Uni-ZAP XR	LP03
HAPA HAPB HAPC HAPM	Human Adult Pulmonary	Uni-ZAP XR	LP03
HETA HETB HETC HETD HETE HETF HETG HETH HETI	Human Endometrial Tumor	Uni-ZAP XR	LP03
HHFB HHFC HHFD HHFE HHFF HHFG HHFH HHFI	Human Fetal Heart	Uni-ZAP XR	LP03
HHPB HHPC HHPD HHPE HHPF HHPG HHPH	Human Hippocampus	Uni-ZAP XR	LP03
HCE1 HCE2 HCE3 HCE4 HCE5 HCEB HCEC HCED HCEE HCEF HCEG	Human Cerebellum	Uni-ZAP XR	LP03
HUVB HUVC HUVD HUVE	Human Umbilical Vein. Endo. remake	Uni-ZAP XR	LP03
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP03
HTAA HTAB HTAC HTAD HTAE	Human Activated T-Cells	Uni-ZAP XR	LP03
HFEA HFEB HFEC	Human Fetal Epithelium (Skin)	Uni-ZAP XR	LP03
HJPA HJPB HJPC HJPD	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Uni-ZAP XR	LP03
HESA	Human epithelioid sarcoma	Uni-Zap XR	LP03
HLTA HLTB HLTC HLTD HLTE HLTF	Human T-Cell Lymphoma	Uni-ZAP XR	LP03
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP03
HRDA HRDB HRDC HRDD HRDE HRDF	Human Rhabdomyosarcoma	Uni-ZAP XR	LP03
HCAA HCAB HCAC	Cem cells cyclohexamide treated	Uni-ZAP XR	LP03
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HSUA HSUB HSUC HSUM	Supt Cells. cyclohexamide treated	Uni-ZAP XR	LP03
HT4A HT4C HT4D	Activated T-Cells, 12 hrs.	Uni-ZAP XR	LP03
HE9A HE9B HE9C HE9D HE9E HE9F HE9G HE9H HE9M HE9N	Nine Week Old Early Stage Human	Uni-ZAP XR	LP03
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP03
HT5A	Activated T-Cells, 24 hrs.	Uni-ZAP XR	LP03
HFGA HFGM	Human Fetal Brain	Uni-ZAP XR	LP03
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP03
HBGB HBGD	Human Primary Breast Cancer	Uni-ZAP XR	LP03
HBNA HBNB	Human Normal Breast	Uni-ZAP XR	LP03
HCAS	Cem Cells, cyclohexamide treated, subtra	Uni-ZAP XR	LP03
HHPS	Human Hippocampus, subtracted	pBS	LP03
HKCS HKCU	Human Colon Cancer, subtracted	pBS	LP03
HRGS	Raji cells. cyclohexamide treated,	pBS	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	subtracted		
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBS	LP03
HT4S	Activated T-Cells, 12 hrs, subtracted	Uni-ZAP XR	LP03
HCDA HCDB HCDC HCDD HCDE	Human Chondrosarcoma	Uni-ZAP XR	LP03
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP03
HTLA HTLB HTLC HTLD HTLE HTLF	Human adult testis, large inserts	Uni-ZAP XR	LP03
HLMA HLMC HLMD	Breast Lymph node cDNA library	Uni-ZAP XR	LP03
H6EA H6EB H6EC	HL-60, PMA 4H	Uni-ZAP XR	LP03
HTXA HTXB HTXC HTXD HTXE HTXF HTXG HTXH	Activated T-Cell (12hs)/Thiouridine labelledEco	Uni-ZAP XR	LP03
HNFA HNFH HNFC HNFD HNFE HNFF HNFG HNFH HNFJ	Human Neutrophil, Activated	Uni-ZAP XR	LP03
HTOB HTOC	HUMAN TONSILS, FRACTION 2	Uni-ZAP XR	LP03
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP03
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP03
HORB	Human OB HOS treated (10 nM E2) fraction I	Uni-ZAP XR	LP03
HSVA HSVB HSVC	Human Chronic Synovitis	Uni-ZAP XR	LP03
HROA	HUMAN STOMACH	Uni-ZAP XR	LP03
HBJA HBJB HBJC HBJD HBJE HBJF HBJG HBJH HBJI HBJJ HBJK	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP03
HCRA HCRB HCRC	human corpus colosum	Uni-ZAP XR	LP03
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP03
HDSA	Dermatofibrosarcoma Protuberance	Uni-ZAP XR	LP03
HMWA HMWB HMWC HMWD HMWE HMWF HMWG HMMH HMWI HMWJ	Bone Marrow Cell Line (RS4;11)	Uni-ZAP XR	LP03
HSOA	stomach cancer (human)	Uni-ZAP XR	LP03
HERA	SKIN	Uni-ZAP XR	LP03
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP03
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP03
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP03
HBCA HBCB	H. Lymph node breast Cancer	Uni-ZAP XR	LP03
HPWT	Human Prostate BPH, re-excision	Uni-ZAP XR	LP03
HFVG HFVH HFVI	Fetal Liver, subtraction II	pBS	LP03
HNFI	Human Neutrophils, Activated, re-excision	pBS	LP03
HBMB HBMC HBMD	Human Bone Marrow, re-excision	pBS	LP03
HKML HKMM HKMN	H. Kidney Medulla, re-excision	pBS	LP03
HKIX HKIY	H. Kidney Cortex, subtracted	pBS	LP03
HADT	H. Amygdala Depression, subtracted	pBS	LP03
H6AS	HL-60, untreated, subtracted	Uni-ZAP XR	LP03
H6ES	HL-60, PMA 4H, subtracted	Uni-ZAP XR	LP03
H6BS	HL-60, RA 4h. Subtracted	Uni-ZAP XR	LP03
H6CS	HL-60. PMA 1d. subtracted	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HTXJ HTXK	Activated T-cell(12h)/Thiouridine-re-excision	Uni-ZAP XR	LP03
HMSA HMSB HMSC HMSD HMSE HMSF HMSG HMSH HMSI HMSJ HMSK	Monocyte activated	Uni-ZAP XR	LP03
HAGA HAGB HAGC HAGD HAGE HAGF	Human Amygdala	Uni-ZAP XR	LP03
HSRA HSRB HSRE	STROMAL -OSTEOCLASTOMA	Uni-ZAP XR	LP03
HSRD HSRF HSRG HSRH	Human Osteoclastoma Stromal Cells - unamplified	Uni-ZAP XR	LP03
HSQA HSQB HSQC HSQD HSQE HSQF HSQG	Stromal cell TF274	Uni-ZAP XR	LP03
HSKA HSKB HSKC HSKD HSKE HSKF HSKZ	Smooth muscle, serum treated	Uni-ZAP XR	LP03
HSLA HSLB HSLC HSLD HSLE HSLF HSLG	Smooth muscle, control	Uni-ZAP XR	LP03
HSDA HSDD HSDE HSDF HSDG HSDH	Spinal cord	Uni-ZAP XR	LP03
HPWS	Prostate-BPH subtracted II	pBS	LP03
HSKW HSKX HSKY	Smooth Muscle- HASTE normalized	pBS	LP03
HFPB HFPC HFPD	H. Frontal cortex, epileptic, re-excision	Uni-ZAP XR	LP03
HSDI HSDJ HSDK	Spinal Cord, re-excision	Uni-ZAP XR	LP03
HSKN HSKO	Smooth Muscle Serum Treated, Norm	pBS	LP03
HSKG HSKH HSKI	Smooth muscle, serum induced, re-exc	pBS	LP03
HFCA HFCB HFCC HFCD HFCE HFCF	Human Fetal Brain	Uni-ZAP XR	LP04
HPTA HPTB HPTD	Human Pituitary	Uni-ZAP XR	LP04
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP04
HE6B HE6C HE6D HE6E HE6F HE6G HE6S	Human Whole Six Week Old Embryo	Uni-ZAP XR	LP04
HSSA HSSB HSSC HSSD HSSE HSSF HSSG HSSH HSSI HSSJ HSSK	Human Synovial Sarcoma	Uni-ZAP XR	LP04
HE7T	7 Week Old Early Stage Human, subtracted	Uni-ZAP XR	LP04
HEPA HEPB HEPD	Human Epididymus	Uni-ZAP XR	LP04
HSNA HSNB HSNB HSNM HSNN	Human Synovium	Uni-ZAP XR	LP04
HPFB HPFC HPFD HPFE	Human Prostate Cancer, Stage C fraction	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2M HE2N HE2O	12 Week Old Early Stage Human	Uni-ZAP XR	LP04
HE2B HE2C HE2F HE2G HE2P HE2Q	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP04
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP04
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP04
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP04
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP04
HBSD	Bone Cancer, re-excision	Uni-ZAP XR	LP04
HSGB	Salivary gland, re-excision	Uni-ZAP XR	LP04
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP04
HSXA HSXB HSXC HSXD	Human Substantia Nigra	Uni-ZAP XR	LP04
HSJA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP04

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HOUA HOUB HOU C HOUD HOUE	Adipocytes	Uni-ZAP XR	LP04
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP04
HELA HELB HELC HELD HELE HELF HELG HELH	Endothelial cells-control	Uni-ZAP XR	LP04
HEMA HEMB HEMC HEMD HEME HEMF HEMG HEMH	Endothelial-induced	Uni-ZAP XR	LP04
HBIA HBIB HBIC	Human Brain, Striatum	Uni-ZAP XR	LP04
HHTA HHTB HHTC HHTD HHTE	Human Hypothalamus.Schizophrenia	Uni-ZAP XR	LP04
HNGA HNGB HNGC HNGD HNGE HNGF HNGG HNGH HNGI HNGJ	neutrophils control	Uni-ZAP XR	LP04
HNHA HNHB HNHC HNHD HNHE HNHF HNHG HNHH HNHI HNHI	Neutrophils IL-1 and LPS induced	Uni-ZAP XR	LP04
HSDB HSDC	STRIATUM DEPRESSION	Uni-ZAP XR	LP04
HHPT	Hypothalamus	Uni-ZAP XR	LP04
HSAT HSAU HSAV HSAW HSAX HSAY HSAZ	Anergic T-cell	Uni-ZAP XR	LP04
HBMS HBMT HBMU HBMV HBMW HBMX	Bone marrow	Uni-ZAP XR	LP04
HOEA HOEB HOEC HOED HOEE HOEF HOEJ	Osteoblasts	Uni-ZAP XR	LP04
HAIA HAIB HAIC HAID HAIE HAIF	Epithelial-TNF $\alpha$ and INF induced	Uni-ZAP XR	LP04
HTGA HTGB HTGC HTGD	Apoptotic T-cell	Uni-ZAP XR	LP04
HMCA HMCB HMCC HMCD HMCE	Macrophage-oxLDL	Uni-ZAP XR	LP04
HMAA HMAB HMAB HMAD HMAE HMAF HMAG	Macrophage (GM-CSF treated)	Uni-ZAP XR	LP04
HPHA	Normal Prostate	Uni-ZAP XR	LP04
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP04
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP04
HOSE HOSF HOSG	Human Osteoclastoma, re-excision	Uni-ZAP XR	LP04
HTGE HTGF	Apoptotic T-cell, re-excision	Uni-ZAP XR	LP04
HMAJ HMAK	H Macrophage (GM-CSF treated), re-excision	Uni-ZAP XR	LP04
HACB HACC HACD	Human Adipose Tissue, re-excision	Uni-ZAP XR	LP04
HFPA	H. Frontal Cortex, Epileptic	Uni-ZAP XR	LP04
HFAA HFAB HFAC HFAD HFAE	Alzheimers, spongy change	Uni-ZAP XR	LP04
HFAM	Frontal Lobe, Dementia	Uni-ZAP XR	LP04
HMIA HMIB HMIC	Human Manic Depression Tissue	Uni-ZAP XR	LP04
HTSA HTSE HTSF HTSG HTSH	Human Thymus	pBS	LP05
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBS	LP05
HSAA HSAB HSAC	HSA 172 Cells	pBS	LP05
HSBA HSBB HSBC HSBM	HSC172 cells	pBS	LP05
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBS	LP05
HJBA HJBB HJBC HJBD	Jurkat T-Cell, S phase	pBS	LP05
HAFA HAFB	Aorta endothelial cells + TNF- $\alpha$	pBS	LP05
HAWA HAWB HAWC	Human White Adipose	pBS	LP05
HTNA HTNB	Human Thyroid	pBS	LP05
HONA	Normal Ovary, Premenopausal	pBS	LP05



Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HARA HARB	Human Adult Retina	pBS	LP05
HLJA HLJB	Human Lung	pCMVSPORT 1	LP06
HOFM HOFN HOFO	H. Ovarian Tumor. II, OV5232	pCMVSPORT 2.0	LP07
HOGA HOGB HOGC	OV 10-3-95	pCMVSPORT 2.0	LP07
HCGL	CD34+cells, II	pCMVSPORT 2.0	LP07
HDLA	Hodgkin's Lymphoma I	pCMVSPORT 2.0	LP07
HDTA HDTB HDTC HDTD HDTE	Hodgkin's Lymphoma II	pCMVSPORT 2.0	LP07
HKAA HKAB HKAC HKAD HKAE HKAF HKAG HKAH	Keratinocyte	pCMVSPORT2.0	LP07
HCIM	CAPFINDER, Crohn's Disease, lib 2	pCMVSPORT 2.0	LP07
HKAL	Keratinocyte, lib 2	pCMVSPORT2.0	LP07
HKAT	Keratinocyte, lib 3	pCMVSPORT2.0	LP07
HNDA	Nasal polyps	pCMVSPORT2.0	LP07
HDRA	H. Primary Dendritic Cells.lib 3	pCMVSPORT2.0	LP07
HOHA HOHB HOHC	Human Osteoblasts II	pCMVSPORT2.0	LP07
HLDA HLDB HLDC	Liver, Hepatoma	pCMVSPORT3.0	LP08
HLDN HLDO HLDP	Human Liver, normal	pCMVSPORT3.0	LP08
HMTA	pBMC stimulated w/ poly I/C	pCMVSPORT3.0	LP08
HNTA	NTERA2, control	pCMVSPORT3.0	LP08
HDPA HDPB HDPC HDPD HDPF HDPG HDPH HDPI HDPJ HDPK	Primary Dendritic Cells, lib 1	pCMVSPORT3.0	LP08
HDPM HDPN HDPO HDPP	Primary Dendritic cells,frac 2	pCMVSPORT3.0	LP08
HMUA HMUB HMUC	Myeloid Progenitor Cell Line	pCMVSPORT3.0	LP08
HHEA HHEB HHEC HHED	T Cell helper I	pCMVSPORT3.0	LP08
HHEM HHEN HHEO HHFP	T cell helper II	pCMVSPORT3.0	LP08
HEQA HEQB HEQC	Human endometrial stromal cells	pCMVSPORT3.0	LP08
HJMA HJMB	Human endometrial stromal cells- treated with progesterone	pCMVSPORT3.0	LP08
HSWA HSWB HSWC	Human endometrial stromal cells- treated with estradiol	pCMVSPORT3.0	LP08
HSYA HSYB HSYC	Human Thymus Stromal Cells	pCMVSPORT3.0	LP08
HLWA HLWB HLWC	Human Placenta	pCMVSPORT3.0	LP08
HRAA HRAB HRAC	Rejected Kidney, lib 4	pCMVSPORT3.0	LP08
HMTM	PCR, pBMC I/C treated	PCR11	LP09
HMJA	H. Meningioma, M6	pSport 1	LP10
HMKA HMKB HMKC HMKD HMKE	H. Meningioma, M1	pSport 1	LP10
HUSG HUSI	Human umbilical vein endothelial cells, IL-4 induced	pSport 1	LP10
HUSX HUSY	Human Umbilical Vein Endothelial Cells, uninduced	pSport 1	LP10
HOFA	Ovarian Tumor I, OV5232	pSport 1	LP10
HCFA HCFB HCFD HCFC	T-Cell PHA 16 hrs	pSport 1	LP10
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport 1	LP10
HADA HADC HADD HADE HADF HADG	Human Adipose	pSport 1	LP10
HOVA HOVB HOVC	Human Ovary	pSport 1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HTWB HTWC HTWD HTWE HTWF	Resting T-Cell Library.II	pSport I	LP10
HMMA	Spleen metastatic melanoma	pSport I	LP10
HLYA HLYB HLYC HLYD HLYE	Spleen, Chronic lymphocytic leukemia	pSport I	LP10
HCGA	CD34+ cell. I	pSport I	LP10
HEOM HEON	Human Eosinophils	pSport I	LP10
HTDA	Human Tonsil. Lib 3	pSport I	LP10
HSPA	Salivary Gland. Lib 2	pSport I	LP10
HCHA HCHB HCHC	Breast Cancer cell line. MDA 36	pSport I	LP10
HCHM HCHN	Breast Cancer Cell line. angiogenic	pSport I	LP10
HCIA	Crohn's Disease	pSport I	LP10
HDAA HDAB HDAC	HEL cell line	pSport I	LP10
HABA	Human Astrocyte	pSport I	LP10
HUFA HUFB HUFC	Ulcerative Colitis	pSport I	LP10
HNTM	NTERA2 + retinoic acid, 14 days	pSport I	LP10
HDQA	Primary Dendritic cells,CapFinder2, frac 1	pSport I	LP10
HDQM	Primary Dendritic Cells, CapFinder, frac 2	pSport I	LP10
HLDX	Human Liver, normal,CapFinder	pSport I	LP10
HULA HULB HULC	Human Dermal Endothelial Cells,untreated	pSport I	LP10
HUMA	Human Dermal Endothelial cells,treated	pSport I	LP10
HCJA	Human Stromal Endometrial fibroblasts, untreated	pSport I	LP10
HCJM	Human Stromal endometrial fibroblasts, treated w/ estradiol	pSport I	LP10
HEDA	Human Stromal endometrial fibroblasts, treated with progesterone	pSport I	LP10
HFNA	Human ovary tumor cell OV350721	pSport I	LP10
HKGA HKGB HKGC HKGD	Merkel Cells	pSport I	LP10
HISA HISB HISC	Pancreas Islet Cell Tumor	pSport I	LP10
HLSA	Skin, burned	pSport I	LP10
HBZA	Prostate,BPH. Lib 2	pSport I	LP10
HBZS	Prostate BPH,Lib 2, subtracted	pSport I	LP10
HFIA HFIB HFIC	Synovial Fibroblasts (control)	pSport I	LP10
HFIH HFII HFIJ	Synovial hypoxia	pSport I	LP10
HFIT HFIU HFIV	Synovial IL-1/TNF stimulated	pSport I	LP10
HGCA	Messangial cell, frac 1	pSport I	LP10
HMVA HMVB HMVC	Bone Marrow Stromal Cell, untreated	pSport I	LP10
HFIX HFIY HFIZ	Synovial Fibroblasts (III/TNF), sub1	pSport I	LP10
HFOX HFOY HFOZ	Synovial hypoxia-RSF subtracted	pSport I	LP10
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP11
HLIA HLIB HLIC	Human Liver	pCMVSPORT I	LP012
HHBA HHBB HHBC HHBD HHBE	Human Heart	pCMVSPORT I	LP012
HBBA HBBB	Human Brain	pCMVSPORT I	LP012
HLJA HLJB HLJC HLJD HLJE	Human Lung	pCMVSPORT I	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HOGA HOGB HOGC	Ovarian Tumor	pCMVSPORT 2.0	LP012
HTJM	Human Tonsils. Lib 2	pCMVSPORT 2.0	LP012
HAMF HAMG	KMH2	pCMVSPORT 3.0	LP012
HAJA HAJB HAJC	L428	pCMVSPORT 3.0	LP012
HWBA HWBB HWBC HWBD HWBE	Dendritic cells, pooled	pCMVSPORT 3.0	LP012
HWAA HWAB HWAC HWAD HWAE	Human Bone Marrow. treated	pCMVSPORT 3.0	LP012
HYAA HYAB HYAC	B Cell lymphoma	pCMVSPORT 3.0	LP012
HWHG HWHH HWHI	Healing groin wound. 6.5 hours post incision	pCMVSPORT 3.0	LP012
HWHP HWHQ HWHR	Healing groin wound: 7.5 hours post incision	pCMVSPORT 3.0	LP012
HARM	Healing groin wound - zero hr post-incision (control)	pCMVSPORT 3.0	LP012
HBIM	Olfactory epithelium: nasalcavity	pCMVSPORT 3.0	LP012
HWDA	Healing Abdomen wound: 70&90 min post incision	pCMVSPORT 3.0	LP012
HWEA	Healing Abdomen Wound;15 days post incision	pCMVSPORT 3.0	LP012
HWJA	Healing Abdomen Wound;21&29 days	pCMVSPORT 3.0	LP012
HNAL	Human Tongue. frac 2	pSportI	LP012
HMJA	H. Meningioma, M6	pSportI	LP012
HMKA HMKB HMKC HMKD HMKE	H. Meningioma, M1	pSportI	LP012
HOFA	Ovarian Tumor I. OV5232	pSportI	LP012
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSportI	LP012
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSportI	LP012
HMMA HMMB HMMC	Spleen metastatic melanoma	pSportI	LP012
HTDA	Human Tonsil. Lib 3	pSportI	LP012
HDBA	Human Fetal Thymus	pSportI	LP012
HDLA	Pericardium	pSportI	LP012
HBZA	Prostate.BPH, Lib 2	pSportI	LP012
HWCA	Larynx tumor	pSportI	LP012
HWKA	Normal lung	pSportI	LP012
HSMB	Bone marrow stroma,treated	pSportI	LP012
HBHM	Normal trachea	pSportI	LP012
HLFC	Human Larynx	pSportI	LP012
HLRB	Siebben Polyposis	pSportI	LP012
HNIA	Mammary Gland	pSportI	LP012
HNJB	Palate carcinoma	pSportI	LP012
HNKA	Palate normal	pSportI	LP012
HMZA	Pharynx carcinoma	pSportI	LP012
HABG	Cheek Carcinoma	pSportI	LP012
HMZM	Pharynx Carcinoma	pSportI	LP012
HDRM	Larynx Carcinoma	pSportI	LP012
HVAA	Pancreas normal PCA4 No	pSportI	LP012
HICA	Tongue carcinoma	pSportI	LP012
HUKA HUKB HUKC HUKD HUKF	Human Uterine Cancer	Lambda ZAP II	LP013
HFFA	Human Fetal Brain, random primed	Lambda ZAP II	LP013
HTUA	Activated T-cell labeled with 4-thioluri	Lambda ZAP II	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HBQA	Early Stage Human Brain. random primed	Lambda ZAP II	LP013
HMEB	Human microvascular Endothelial cells. fract. B	Lambda ZAP II	LP013
HUSH	Human Umbilical Vein Endothelial cells. fract. A, re-excision	Lambda ZAP II	LP013
HLQC HLQD	Hepatocellular tumor. re-excision	Lambda ZAP II	LP013
HTWJ HTWK HTWL	Resting T-cell, re-excision	Lambda ZAP II	LP013
HF6S	Human Whole 6 week Old Embryo (II). sub1	pBluescript	LP013
HHPS	Human Hippocampus. subtracted	pBluescript	LP013
HLIS	LNCAP. differential expression	pBluescript	LP013
HLHS HLHT	Early Stage Human Lung. Subtracted	pBluescript	LP013
HSUS	Supt cells, cyclohexamide treated, subtracted	pBluescript	LP013
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBluescript	LP013
HSDS	H. Striatum Depression, subtracted	pBluescript	LP013
HPTZ	Human Pituitary, Subtracted VII	pBluescript	LP013
HSDX	H. Striatum Depression, sub1 II	pBluescript	LP013
HSDZ	H. Striatum Depression, sub1	pBluescript	LP013
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBluescript SK-	LP013
HRTA	Colorectal Tumor	pBluescript SK-	LP013
HSBA HSBB HSBC HSBM	HSC172 cells	pBluescript SK-	LP013
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBluescript SK-	LP013
HJBA HJBB HJBC HJBD	Jurkat T-cell, S1 phase	pBluescript SK-	LP013
HTNA HTNB	Human Thyroid	pBluescript SK-	LP013
HAHA HAHB	Human Adult Heart	Uni-ZAP XR	LP013
HE6A	Whole 6 week Old Embryo	Uni-ZAP XR	LP013
HFCA HFCB HFCC HFCD HFCE	Human Fetal Brain	Uni-ZAP XR	LP013
HFKE HFKE HFKE HFKE HFKE	Human Fetal Kidney	Uni-ZAP XR	LP013
HGBA HGBD HGBE HGBF HGBG	Human Gall Bladder	Uni-ZAP XR	LP013
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP013
HTEA HTEB HTEC HTED HTEE	Human Testes	Uni-ZAP XR	LP013
HTTA HTTB HTTC HTTD HTTE	Human Testes Tumor	Uni-ZAP XR	LP013
HYBA HYBB	Human Fetal Bone	Uni-ZAP XR	LP013
HFLA	Human Fetal Liver	Uni-ZAP XR	LP013
HHFB HHFC HHFD HHFE HHFF	Human Fetal Heart	Uni-ZAP XR	LP013
HUVB HUVB HUVB HUVB	Human Umbilical Vein, End. remake	Uni-ZAP XR	LP013
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP013
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP013
HTAA HTAB HTAC HTAD HTAE	Human Activated T-cells	Uni-ZAP XR	LP013
HFEA HFEB HFEC	Human Fetal Epithelium (skin)	Uni-ZAP XR	LP013
HJPA HJPB HJPC HJPD	Human Jurkat Membrane Bound Polysomes	Uni-ZAP XR	LP013
HESA	Human Epithelioid Sarcoma	Uni-ZAP XR	LP013
HALS	Human Adult Liver, Subtracted	Uni-ZAP XR	LP013
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP013
HCAA HCAB HCAC	Cem cells, cyclohexamide treated	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP013
HE9A HE9B HE9C HE9D HE9E	Nine Week Old Early Stage Human	Uni-ZAP XR	LP013
HSFA	Human Fibrosarcoma	Uni-ZAP XR	LP013
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP013
HTRA	Human Trachea Tumor	Uni-ZAP XR	LP013
HE2A HE2D HE2E HE2H HE2I	12 Week Old Early Stage Human	Uni-ZAP XR	LP013
HE2B HE2C HE2F HE2G HE2P	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP013
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP013
HBGA	Human Primary Breast Cancer	Uni-ZAP XR	LP013
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP013
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP013
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP013
HTOA HTOD HTOE HTOF HTOG	human tonsils	Uni-ZAP XR	LP013
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP013
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP013
HOQB	Human OB HOS treated (1 nM E2) fraction I	Uni-ZAP XR	LP013
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP013
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP013
HROA HROC	HUMAN STOMACH	Uni-ZAP XR	LP013
HBJA HBJB HBJC HBJD HBJE	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP013
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP013
HCPA	Corpus Callosum	Uni-ZAP XR	LP013
HSOA	stomach cancer (human)	Uni-ZAP XR	LP013
HERA	SKIN	Uni-ZAP XR	LP013
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP013
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP013
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP013
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP013
HAPN HAPO HAPP HAPQ HAPR	Human Adult Pulmonary;re-excision	Uni-ZAP XR	LP013
HLTG HLTH	Human T-cell lymphoma;re-excision	Uni-ZAP XR	LP013
HAHC HAHD HAHE	Human Adult Heart;re-excision	Uni-ZAP XR	LP013
HAGA HAGB HAGC HAGD HAGE	Human Amygdala	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP013
HSJA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP013
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP013
HPJA HPJB HPJC	LNCAP prostate cell line	Uni-ZAP XR	LP013
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP013
HBTA	Bone Marrow Stroma, TNF&LPS ind	Uni-ZAP XR	LP013
HMCF HMCB HMCH HMCJ HMCJ	Macrophage-oxLDL; re-excision	Uni-ZAP XR	LP013
HAGG HAGH HAGI	Human Amygdala;re-excision	Uni-ZAP XR	LP013
HACA	H. Adipose Tissue	Uni-ZAP XR	LP013
HKFB	K562 + PMA (36 hrs),re-excision	ZAP Express	LP013
HCWT HCWU HCWV	CD34 positive cells (cord blood),re-ex	ZAP Express	LP013
HBWA	Whole brain	ZAP Express	LP013
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HAVM	Temporal cortex-Alzheimer	pT-Adv	LP014
HAVT	Hippocampus, Alzheimer Subtracted	pT-Adv	LP014
HHAS	CHME Cell Line	Uni-ZAP XR	LP014
HAJR	Larynx normal	pSport 1	LP014
HWLE HWLF HWLG HWLH	Colon Normal	pSport 1	LP014
HCRM HCRN HCRO	Colon Carcinoma	pSport 1	LP014
HWLI HWLJ HWLK	Colon Normal	pSport 1	LP014
HWLH HWLR HWLS HWLT	Colon Tumor	pSport 1	LP014
HBFM	Gastrocnemius Muscle	pSport 1	LP014
HBOD HBOE	Quadriceps Muscle	pSport 1	LP014
HBKD HBKE	Soleus Muscle	pSport 1	LP014
HCCM	Pancreatic Langerhans	pSport 1	LP014
HWGA	Larynx carcinoma	pSport 1	LP014
HWGM HWGN	Larynx carcinoma	pSport 1	LP014
HWLA HWLB HWLC	Normal colon	pSport 1	LP014
HWLM HWLN	Colon Tumor	pSport 1	LP014
HVAM HVAN HVAO	Pancreas Tumor	pSport 1	LP014
HWGQ	Larynx carcinoma	pSport 1	LP014
HAQM HAQN	Salivary Gland	pSport 1	LP014
HASM	Stomach; normal	pSport 1	LP014
HBCM	Uterus; normal	pSport 1	LP014
HCDM	Testis; normal	pSport 1	LP014
HDJM	Brain; normal	pSport 1	LP014
HEFM	Adrenal Gland, normal	pSport 1	LP014
HBAA	Rectum normal	pSport 1	LP014
HFDM	Rectum tumour	pSport 1	LP014
HGAM	Colon, normal	pSport 1	LP014
HHMM	Colon, tumour	pSport 1	LP014
HCLB HCLC	Human Lung Cancer	Lambda Zap II	LP015
HRLA	L1 Cell line	ZAP Express	LP015
HHAM	Hypothalamus, Alzheimer's	pCMVSPORT 3.0	LP015
HKBA	Ku 812F Basophils Line	pSport 1	LP015
HS2S	Saos2, Dexamethasone Treated	pSport 1	LP016
HASA	Lung Carcinoma A549 TNFalpha activated	pSport 1	LP016
HTFM	TF-1 Cell Line GM-CSF Treated	pSport 1	LP016
HYAS	Thyroid Tumour	pSport 1	LP016
HUTS	Larynx Normal	pSport 1	LP016
HXOA	Larynx Tumor	pSport 1	LP016
HEAH	Ea.hy.926 cell line	pSport 1	LP016
HINA	Adenocarcinoma Human	pSport 1	LP016
HRMA	Lung Mesothelium	pSport 1	LP016
HLCL	Human Pre-Differentiated Adipocytes	Uni-Zap XR	LP017
HS2A	Saos2 Cells	pSport 1	LP020
HS2I	Saos2 Cells; Vitamin D3 Treated	pSport 1	LP020
HUCM	CHME Cell Line, untreated	pSport 1	LP020
HEPN	Aryepiglottis Normal	pSport 1	LP020

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HPSN	Sinus Piniformis Tumour	pSport 1	LP020
HNSA	Stomach Normal	pSport 1	LP020
HNSM	Stomach Tumour	pSport 1	LP020
HNLA	Liver Normal Met5No	pSport 1	LP020
HUTA	Liver Tumour Met 5 Tu	pSport 1	LP020
HOCN	Colon Normal	pSport 1	LP020
HOCT	Colon Tumour	pSport 1	LP020
HTNT	Tongue Tumour	pSport 1	LP020
HLXN	Larynx Normal	pSport 1	LP020
HLXT	Larynx Tumour	pSport 1	LP020
HTYN	Thymus	pSport 1	LP020
HPLN	Placenta	pSport 1	LP020
HTNG	Tongue Normal	pSport 1	LP020
HZAA	Thyroid Normal (SDCA2 No)	pSport 1	LP020
HWES	Thyroid Thyroiditis	pSport 1	LP020
HFHD	Ficoll Human Stromal Cells. 5Fu treated	pTrip1Ex2	LP021
HFHM, HFHN	Ficoll Human Stromal Cells. Untreated	pTrip1Ex2	LP021
HPCI	Hep G2 Cells, lambda library	lambda Zap-CMV XR	LP021
HBCA, HBCB, HBCC	H. Lymph node breast Cancer	Uni-ZAP XR	LP021
HCOK	Chondrocytes	pSPORT1	LP022
HDCA, HDCB, HDCC	Dendritic Cells From CD34 Cells	pSPORT1	LP022
HDMA, HDMB	CD40 activated monocyte dendritic cells	pSPORT1	LP022
HDDM, HDDN, HDDO	LPS activated derived dendritic cells	pSPORT1	LP022
HPCR	Hep G2 Cells, PCR library	lambda Zap-CMV XR	LP022
HAAA, HAAB, HAAC	Lung, Cancer (4005313 A3): Invasive Poorly Differentiated Lung Adenocarcinoma	pSPORT1	LP022
HIPA, HIPB, HIPC	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	pSPORT1	LP022
HOOH, HOOI	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	pSPORT1	LP022
HIDA	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HUJA, HUJB, HUJC, HUJD, HUJE	B-Cells	pCMVSPORT 3.0	LP022
HNOA, HNOB, HNOC, HNOD	Ovary, Normal: (9805C040R)	pSPORT1	LP022
HNLM	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HSCL	Stromal Cells	pSPORT1	LP022
HAAX	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenocarcinoma	pSPORT1	LP022
HUUA, HUUB, HUUC, HUUD	B-cells (unstimulated)	pTrip1Ex2	LP022
HWWA, HWWB, HWWC, HWWD, HWE, HWWF, HWWG	B-cells (stimulated)	pSPORT1	LP022
HCCC	Colon, Cancer: (9808C064R)	pCMVSPORT 3.0	LP023
HPDO HPDP HPDQ HPDR HPD	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	pSport 1	LP023

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HPCO HPCP HPCQ HPCT	Ovary, Cancer (15395A1F): Grade II Papillary Carcinoma	pSport 1	LP023
HOCM HOCO HOCQ HOCQ	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	pSport 1	LP023
HCBM HCBN HCBO	Breast, Cancer: (4004943 A5)	pSport 1	LP023
HNBT HNBU HNBV	Breast, Normal: (4005522B2)	pSport 1	LP023
HBCP HBCQ	Breast, Cancer: (4005522 A2)	pSport 1	LP023
HBCJ	Breast, Cancer: (9806C012R)	pSport 1	LP023
HSAM HSAN	Stromal cells 3.88	pSport 1	LP023
HVCA HVCB HVCC HVCD	Ovary, Cancer: (4004332 A2)	pSport 1	LP023
HSCK HSEN HSEO	Stromal cells (HBM3.18)	pSport 1	LP023
HSCP HSCQ	stromal cell clone 2.5	pSport 1	LP023
HUXA	Breast Cancer: (4005385 A2)	pSport 1	LP023
HCOM HCON HCOO HCOP HCOQ	Ovary, Cancer (4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	pSport 1	LP023
HBNM	Breast, Cancer: (9802C020E)	pSport 1	LP023
HVVA HVVB HVVC HVVD HVVE	Human Bone Marrow, treated	pSport 1	LP023



Two approaches can be used to isolate a particular clone from the deposited sample of plasmid DNAs cited for that clone in Table 5. First, a plasmid is directly isolated by screening the clones using a polynucleotide probe corresponding to the nucleotide sequence of SEQ ID NO:X.

5        Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with  $^{32}\text{P}$ - $\gamma$ -ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press, Cold Spring, NY (1982).) The plasmid  
10        mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using  
15        Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

          Alternatively, two primers of 17-20 nucleotides derived from both ends of the  
20        nucleotide sequence of SEQ ID NO:X are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25  $\mu\text{l}$  of reaction mixture with 0.5  $\mu\text{g}$  of the above cDNA template. A convenient reaction mixture is 1.5-5 mM  $\text{MgCl}_2$ , 0.01% (w/v) gelatin, 20  $\mu\text{M}$  each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of  
25        Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA  
30        product.

          Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not

limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., Nucleic Acids Res. 21(7):1683-1684 (1993).)

5 Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full  
10 length gene.

This above method starts with total RNA isolated from the desired source, although poly-A<sup>+</sup> RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the  
15 RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

This modified RNA preparation is used as a template for first strand cDNA synthesis  
20 using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

25

***Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide***

A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the sequence corresponding to SEQ ID NO:X, according to the method  
30 described in Example 1. (See also, Sambrook.)

***Example 3: Tissue specific expression analysis***

The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue specific cDNA libraries. Libraries generated from a particular tissue are selected and the specific tissue expression pattern of EST groups or assembled contigs within these libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs which show tissue specific expression are selected.

The original clone from which the specific EST sequence was generated, is obtained from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured then transferred in 96 well format to a nylon membrane (Schleicher and Schuell) generating an array filter of tissue specific clones. Housekeeping genes, maize genes, and known tissue specific genes are included on the filters. These targets can be used in signal normalization and to validate assay sensitivity. Additional targets are included to monitor probe length and specificity of hybridization.

Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed. The hybridization probes are purified by gel exclusion chromatography, quantitated, and hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are identified and the full length sequence of these clones is generated.

25

***Example 4: Chromosomal Mapping of the Polynucleotides***

An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions : 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute

cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions is analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR  
5 fragment in the particular somatic cell hybrid.

***Example 5: Bacterial Expression of a Polypeptide***

A polynucleotide encoding a polypeptide of the present invention is amplified using  
10 PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial  
15 expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Amp<sup>r</sup>), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is  
20 ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan<sup>r</sup>). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is  
25 isolated and confirmed by restriction analysis.

Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 (O.D.<sup>600</sup>) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto  
30 pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8, the column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM imidazole. Imidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl.

The purified protein is stored at 4°C or frozen at -80°C.

In addition to the above expression vector, the present invention further includes an expression vector comprising phage operator and promoter elements operatively linked to a polynucleotide of the present invention, called pHE4a. (ATCC Accession Number 209645, deposited on February 25, 1998.) This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (*lacIq*). The origin of replication (*oriC*) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter sequence and operator sequences are made synthetically.

DNA can be inserted into the pHEa by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction

sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

The engineered vector could easily be substituted in the above protocol to express  
5 protein in a bacterial system.

***Example 6: Purification of a Polypeptide from an Inclusion Body***

The following alternative method can be used to purify a polypeptide expressed in *E*  
10 *coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell  
15 paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

The cells are then lysed by passing the solution through a microfluidizer (Microfluidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then  
20 mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is  
25 discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous  
30 stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16  $\mu\text{m}$  membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column  
5 is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

Fractions containing the polypeptide are then pooled and mixed with 4 volumes of  
10 water. The diluted sample is then loaded onto a previously prepared set of tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging  
15 from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant  $A_{280}$  monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from  
20 Commassie blue stained 16% SDS-PAGE gel when 5  $\mu\text{g}$  of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

#### *Example 7: Cloning and Expression of a Polypeptide in a Baculovirus Expression System*

25

In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of  
30 the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak *Drosophila* promoter in the same orientation, followed by the

polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., *Virology* 170:31-39 (1989).

Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("GeneClean" BIO 101 Inc., La Jolla, Ca.).

The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

Five µg of a plasmid containing the polynucleotide is co-transfected with 1.0 µg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., *Proc.*



Natl. Acad. Sci. USA 84:7413-7417 (1987). One  $\mu\text{g}$  of BaculoGold™ virus DNA and 5  $\mu\text{g}$  of the plasmid are mixed in a sterile well of a microtiter plate containing 50  $\mu\text{l}$  of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10  $\mu\text{l}$  Lipofectin plus 90  $\mu\text{l}$  Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.

After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200  $\mu\text{l}$  of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5  $\mu\text{Ci}$  of  $^{35}\text{S}$ -methionine and 5  $\mu\text{Ci}$   $^{35}\text{S}$ -cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

*Example 8: Expression of a Polypeptide in Mammalian Cells*

The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLVI, HIVI and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSPORT 2.0, and pCMVSPORT 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, hygromycin allows the identification and isolation of the transfected cells.

The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No. 209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 5 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

Specifically, the plasmid pC6, for example, is digested with appropriate restriction 10 enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the vector does not need a second signal peptide. 15 Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., WO 96/34891.)

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

20 The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

25 Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five  $\mu$ g of the expression plasmid pC6 or pC4 is cotransfected with 0.5  $\mu$ g of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM 30 supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of methotrexate plus 1 mg/ml G418. After about 10-14 days single clones

are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1  $\mu$ M, 2  $\mu$ M, 5  $\mu$ M, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200  $\mu$ M. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

#### *Example 9: Protein Fusions*

10

The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the half-life time in vivo. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

For example, if pC4 (Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without

a stop codon, otherwise a fusion protein will not be produced.

If the naturally occurring signal sequence is used to produce the polypeptide of the present invention, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous  
 5 signal sequence. (See, e.g., WO 96/34891.)

Human IgG Fc region:

GGGATCCGGAGCCCAAATCTTCTGACAAAACCTCACACATGCCACCGTGCCCAG  
 CACCTGAATTCGAGGGTGCACCGTCAGTCTTCCTCTTCCCCCAAACCCAAGGA  
 10 CACCCTCATGATCTCCCGGACTCCTGAGGTCACATGCGTGGTGGTGGACGTAAGC  
 CACGAAGACCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCAT  
 AATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTC  
 AGCGTCCTACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGC  
 AAGGTCTCCAACAAAGCCCTCCCAACCCCCATCGAGAAAACCATCTCCAAAGCC  
 15 AAAGGGCAGCCCCGAGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAG  
 CTGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAAAGGCTTCTATCCAAGC  
 GACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAACAACACTACAAGAC  
 CACGCCTCCCGTGCTGGACTCCGACGGCTCCTTCTTCTCTACAGCAAGCTCACC  
 GTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCATGCTCCGTGATGCAT  
 20 GAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCTCCGGGTAAAT  
 GAGTGCGACGGCCGCGACTCTAGAGGAT (SEQ ID NO:1685)

*Example 10: Production of an Antibody from a Polypeptide*

#### 25 a) Hybridoma Technology

The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing polypeptide of the present invention are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of polypeptide  
 30 of the present invention is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

Monoclonal antibodies specific for polypeptide of the present invention are prepared using hybridoma technology. (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol. 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In  
5 general, an animal (preferably a mouse) is immunized with polypeptide of the present invention or, more preferably, with a secreted polypeptide of the present invention-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino  
10 acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in  
15 HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide of the present invention.

Alternatively, additional antibodies capable of binding to polypeptide of the present  
20 invention can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma  
25 cells are screened to identify clones which produce an antibody whose ability to bind to the polypeptide of the present invention-specific antibody can be blocked by polypeptide of the present invention. Such antibodies comprise anti-idiotypic antibodies to the polypeptide of the present invention-specific antibody and are used to immunize an animal to induce formation of further polypeptide of the present invention-specific antibodies.

30 For in vivo use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized

antibodies are known in the art and are discussed herein. (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

**b) Isolation Of Antibody Fragments Directed Against Polypeptide of the Present Invention From A Library Of scFvs**

Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against polypeptide of the present invention to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

*Rescue of the Library.* A library of scFvs is constructed from the RNA of human PBLs as described in PCT publication WO 92/01047. To rescue phage displaying antibody fragments, approximately 109 E. coli harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 µg/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to inoculate 50 ml of 2xTY-AMP-GLU, 2 x 10<sup>8</sup> TU of delta gene 3 helper (M13 delta gene III, see PCT publication WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 µg/ml ampicillin and 50 µg/ml kanamycin and grown overnight. Phage are prepared as described in PCT publication WO 92/01047.

M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37° C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 µg ampicillin/ml and 25 µg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations

(Sambrook et al., 1990), resuspended in 2 ml PBS and passed through a 0.45  $\mu$ m filter (Minisart NML; Sartorius) to give a final concentration of approximately 10<sup>13</sup> transducing units/ml (ampicillin-resistant clones).

*Panning of the Library.* Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100  $\mu$ g/ml or 10  $\mu$ g/ml of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately 10<sup>13</sup> TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15 minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1% glucose and 100  $\mu$ g/ml ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

*Characterization of Binders.* Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with either 10 pg/ml of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., PCT publication WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

*Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide*



RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is be isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X; and/or the nucleotide sequence of the related cDNA in the cDNA clone contained in a deposited library. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).

PCR products are then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase. (Epicentre Technologies). The intron-exon borders of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations is then cloned and sequenced to validate the results of the direct sequencing.

PCR products is cloned into T-tailed vectors as described in Holton et al., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals are identified by mutations not present in unaffected individuals.

Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenin deoxy-uridine 5'-triphosphate (Boehringer Mannheim), and FISH performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an

associated disease.

*Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample*

5           A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

          For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample,  
10       preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

          The coated wells are then incubated for > 2 hours at RT with a sample containing the  
15       polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbounded polypeptide.

          Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of  
25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again  
20       washed three times with deionized or distilled water to remove unbounded conjugate.

          Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence  
25       or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

*Example 13: Formulation*

30           The invention also provides methods of treatment and/or prevention of diseases or disorders (such as, for example, any one or more of the diseases or disorders disclosed

herein) by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant a polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

5           The Therapeutic will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such  
10 considerations.

As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1 µg/kg/day to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day, and most  
15 preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given continuously, the Therapeutic is typically administered at a dose rate of about 1 µg/kg/hour to about 50 µg/kg/hour, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following  
20 treatment for responses to occur appears to vary depending on the desired effect.

Therapeutics can be administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material  
25 or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally,  
30 rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler,

diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or microcapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., *Biopolymers* 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (Langer et al., *J. Biomed. Mater. Res.* 15:167-277 (1981), and Langer, *Chem. Tech.* 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., *Id.*) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (*see* generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., *Proc. Natl. Acad. Sci. (USA)* 82:3688-3692 (1985); Hwang et al., *Proc. Natl. Acad. Sci.(USA)* 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, *CRC Crit. Ref. Biomed. Eng.* 14:201 (1987); Buchwald et al., *Surgery* 88:507 (1980); Saudek et al., *N. Engl. J. Med.* 321:574 (1989)).

Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form

(solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to the

5 Therapeutic.

Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such  
10 carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate,  
15 succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including  
20 cellulose or its derivatives, glucose, manose, or dextrans; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be  
25 understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port,  
30 for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

Therapeutics ordinarily will be stored in unit or multi-dose containers, for example,

sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic  
5 using bacteriostatic Water-for-Injection.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products,  
10 which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the Therapeutics may be employed in conjunction with other therapeutic compounds.

The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention  
15 include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG, and MPL. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include,  
20 but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diphtheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping  
25 cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined  
30 agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the Therapeutics of the invention, include but not limited to, other members of the TNF family, chemotherapeutic agents, antibiotics, steroidal and non-steroidal anti-inflammatories, conventional immunotherapeutic agents, cytokines and/or growth factors. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

In one embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered with the Therapeutics of the invention include, but are not limited to, soluble forms of TNF-alpha, lymphotoxin-alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), TR6 (International Publication No. WO 98/30694), OPG, and neutrokin-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-1BB, TR2 (International Publication No. WO 96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TR6 (International Publication No. WO 98/30694), TR7 (International Publication No. WO 98/41629), TRANK, TR9 (International Publication No. WO 98/56892), TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

In certain embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors. Nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™

(didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERIT™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). Non-nucleoside reverse transcriptase inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, VIRAMUNE™ (nevirapine), RESCRIPTOR™ (delavirdine), and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

In other embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICLOVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™,



FOSCARNET™, and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of the invention are used in any combination with FLUCONAZOLE™, ITRACONAZOLE™, and/or KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection.

- 5 In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an
- 10 opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

- In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the
- 15 Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

- In a further embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases,
- 20 aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol, cephalosporins, ciprofloxacin, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamthoxazole, and vancomycin.

- Conventional nonspecific immunosuppressive agents, that may be administered in
- 25 combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells.

- In specific embodiments, Therapeutics of the invention are administered in
- 30 combination with immunosuppressants. Immunosuppressants preparations that may be administered with the Therapeutics of the invention include, but are not limited to, ORTHOCLONE™ (OKT3), SANDIMMUNE™/NEORAL™/SANGDYA™ (cyclosporin),

PROGRAF™ (tacrolimus), CELLCEPT™ (mycophenolate), Azathioprine, glucocorticosteroids, and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be used to prevent rejection of organ or bone marrow transplantation.

In an additional embodiment, Therapeutics of the invention are administered alone or  
5 in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin preparations in  
10 transplantation therapy (e.g., bone marrow transplant).

In an additional embodiment, the Therapeutics of the invention are administered alone or in combination with an anti-inflammatory agent. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, glucocorticoids and the nonsteroidal anti-inflammatories, aminoarylcarboxylic acid  
15 derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline,  
20 perisoxal, pifoxime, proquazone, proxazole, and tenidap.

In another embodiment, compositions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to, antibiotic derivatives (e.g., doxorubicin, bleomycin, daunorubicin, and dactinomycin); antiestrogens  
25 (e.g., tamoxifen); antimetabolites (e.g., fluorouracil, 5-FU, methotrexate, floxuridine, interferon alpha-2b, glutamic acid, plicamycin, mercaptopurine, and 6-thioguanine); cytotoxic agents (e.g., carmustine, BCNU, lomustine, CCNU, cytosine arabinoside, cyclophosphamide, estramustine, hydroxyurea, procarbazine, mitomycin, busulfan, cis-platin, and vincristine sulfate); hormones (e.g., medroxyprogesterone, estramustine phosphate  
30 sodium, ethinyl estradiol, estradiol, megestrol acetate, methyltestosterone, diethylstilbestrol diphosphate, chlorotrianisene, and testolactone); nitrogen mustard derivatives (e.g., mephalen, chorambucil, mechlorethamine (nitrogen mustard) and thiotepa); steroids and

combinations (e.g., bethamethasone sodium phosphate); and others (e.g., dicarbazine, asparaginase, mitotane, vincristine sulfate, vinblastine sulfate, and etoposide).

In a specific embodiment, Therapeutics of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or  
5 any combination of the components of CHOP. In another embodiment, Therapeutics of the invention are administered in combination with Rituximab. In a further embodiment, Therapeutics of the invention are administered with Rituxmab and CHOP, or Rituxmab and any combination of the components of CHOP.

In an additional embodiment, the Therapeutics of the invention are administered in  
10 combination with cytokines. Cytokines that may be administered with the Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11,  
15 IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived  
20 Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PIGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PIGF-2), as disclosed in Hauser et al., Growth Factors, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International  
25 Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial  
30 Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as

disclosed in German Patent Number DE19639601. The above mentioned references are incorporated herein by reference herein.

In an additional embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, LEUKINE™ (SARGRAMOSTIM™) and NEUPOGEN™ (FILGRASTIM™).

In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

15

*Example 14: Method of Treating Decreased Levels of the Polypeptide*

The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an agonist of the invention (including polypeptides of the invention). Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a polypeptide of the present invention in an individual can be treated by administering the agonist or antagonist of the present invention. Thus, the invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist or antagonist to increase the activity level of the polypeptide in such an individual.

For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist or antagonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

30

*Example 15: Method of Treating Increased Levels of the Polypeptide*

The present invention also relates to a method of treating an individual in need of a decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 13.

*Example 16: Method of Treatment Using Gene Therapy-Ex Vivo*

One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for approximately one week.

At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

The cDNA encoding a polypeptide of the present invention can be amplified using

PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1 using primers and having appropriate restriction sites and initiation/stop codons, if necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is produced.

The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

#### *Example 17: Gene Therapy Using Endogenous Genes Corresponding To Polynucleotides of the Invention*

Another method of gene therapy according to the present invention involves operably

associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl. Acad. Sci. USA*, 86:8932-8935 (1989); and Zijlstra et al., *Nature*, 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous polynucleotide sequence, flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel then purified by phenol extraction and ethanol precipitation.

In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be detected by immunological staining, or any other method known in the art.

Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase fibroblasts are trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl, 5 mM KCl, 0.7 mM Na<sub>2</sub>HPO<sub>4</sub>, 6 mM dextrose). The cells are recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin. The final cell suspension contains approximately  $3 \times 10^6$  cells/ml. Electroporation should be performed immediately following resuspension.

Plasmid DNA is prepared according to standard techniques. For example, to construct a plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3' end. Two non-coding sequences are amplified via PCR: one non-coding sequence (fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3' end; the other non-coding sequence (fragment 2) is amplified with a BamHI site at the 5' end and a HindIII site at the 3' end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The final DNA concentration is generally at least 120 µg/ml. 0.5 ml of the cell suspension (containing approximately  $1.5 \times 10^6$  cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 µF and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a



10 cm dish and incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

*Example 18: Method of Treatment Using Gene Therapy - In Vivo*

Another aspect of the present invention is using *in vivo* gene therapy methods to treat disorders, diseases and conditions. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., Cardiovasc. Res. 35(3):470-479 (1997); Chao et al., Pharmacol. Res. 35(6):517-522 (1997); Wolff, Neuromuscul. Disord. 7(5):314-318 (1997); Schwartz et al., Gene Ther. 3(5):405-411 (1996); Tsurumi et al., Circulation 94(12):3281-3290 (1996) (incorporated herein by reference).

The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) Ann. NY Acad. Sci. 772:126-139 and Abdallah B. et al. (1995) Biol. Cell 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that

allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapies techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA  
5 sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis,  
10 ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and  
15 the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such  
20 as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably  
25 from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial  
30 space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked polynucleotide constructs can be delivered to

arteries during angioplasty by the catheter used in the procedure.

The dose response effects of injected polynucleotide in muscle *in vivo* is determined as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology.

- 5 The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

- 10 Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

- 15 After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15 um cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be  
20 determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be use to extrapolate proper dosages and other treatment parameters in humans and other animals using naked DNA.

25 *Example 19: Transgenic Animals*

- The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, *e.g.*, baboons, monkeys,  
30 and chimpanzees may be used to generate transgenic animals. In a specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans, as part of a gene therapy protocol.

Any technique known in the art may be used to introduce the transgene (i.e., polynucleotides of the invention) into animals to produce the founder lines of transgenic animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989)); electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention using a gene gun (see, e.g., Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pluripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, see Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

The present invention provides for transgenic animals that carry the transgene in all their cells, as well as animals which carry the transgene in some, but not all their cells, i.e., mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, e.g., head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous gene, gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of

the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

Once transgenic animals have been generated, the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

30

#### *Example 20: Knock-Out Animals*

Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (E.g., see Smithies et al., Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987); Thompson et al., Cell 5:313-321 (1989); each of which is incorporated by reference herein in its entirety). For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (e.g., see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and

preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

20

*Example 22: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation*

Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

**In Vitro Assay-** Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed *Staphylococcus aureus* Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added  $10^5$  B-cells suspended in culture medium (RPMI 1640 containing 10% FBS,  $5 \times 10^{-5}$ M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and  $10^{-5}$  dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with  $^3$ H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

**In Vivo Assay-** BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity



of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker, anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice.

Likewise, a predicted consequence of increased mature B-cell representation in vivo is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

#### *Example 23: T Cell Proliferation Assay*

A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of  $^3\text{H}$ -thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100  $\mu\text{l}$ /well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1  $\mu\text{g}/\text{ml}$  in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells ( $5 \times 10^4$ /well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200  $\mu\text{l}$ ). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100  $\mu\text{l}$  of supernatant is removed and stored -20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100  $\mu\text{l}$  of medium containing 0.5 uCi of  $^3\text{H}$ -thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of  $^3\text{H}$ -thymidine used as a measure of proliferation.

Anti-CD3 alone is the positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation of T cells is used as the negative controls for the effects of agonists or antagonists of the invention.

- 5       The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

10       *Example 24: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II, Costimulatory and Adhesion Molecules and Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells*

- Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF- $\alpha$ , causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FC $\gamma$ RII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.
- 15
- 20

- FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).
- 25

- Effect on the production of cytokines. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Th1 helper T-cell immune response, and induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells ( $10^6$ /ml) are treated with increasing concentrations of agonists or antagonists of the
- 30

invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using commercial ELISA kit (e.g., R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

5

Effect on the expression of MHC Class II, costimulatory and adhesion molecules. Three major families of cell surface antigens can be identified on monocytes: adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increase expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degreesC. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

Monocyte activation and/or increased survival. Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

Monocyte Survival Assay. Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated process (apoptosis). Addition to the culture of activating factors, such as TNF-alpha

dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are suspended at a concentration of  $2 \times 10^6$ /ml in PBS containing PI at a final concentration of 5  $\mu$ g/ml, and then incubated at room temperature for 5 minutes before FACSscan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

- 10 Effect on cytokine release. An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of  $5 \times 10^5$  cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but  
15 in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e. g, R & D Systems (Minneapolis, MN)) and applying the standard  
20 protocols provided with the kit.

- Oxidative burst. Purified monocytes are plated in 96-w plate at  $2 \times 10^5$  cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After  
25 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20  $\mu$ l 1N NaOH per well. The  
30 absorbance is read at 610 nm. To calculate the amount of  $H_2O_2$  produced by the macrophages, a standard curve of a  $H_2O_2$  solution of known molarity is performed for each experiment.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

5

*Example 25: Biological Effects of Agonists or Antagonists of the Invention*

Astrocyte and Neuronal Assays.

Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified  
10 as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from  
15 FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of  
20 dissociated hippocampal neurons and enhances neurite extension." *Proc. Natl. Acad. Sci. USA* 83:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal  
25 culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

Fibroblast and endothelial cell assays.

30 Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from

Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE<sub>2</sub> assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1 $\alpha$  for 24 hours. The supernatants are collected and assayed for PGE<sub>2</sub> by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1 $\alpha$  for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

20

#### Parkinson Models.

The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine (MPP<sup>+</sup>) and released. Subsequently, MPP<sup>+</sup> is actively accumulated in dopaminergic neurons by the high-affinity reuptake transporter for dopamine. MPP<sup>+</sup> is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotinamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

30

It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined *in vitro* in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm<sup>2</sup> on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days *in vitro* and are processed for tyrosine hydroxylase, a specific marker for dopaminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

*Example 26: The Effect of Agonists or Antagonists of the Invention on the Growth of Vascular Endothelial Cells*

On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at  $2-5 \times 10^4$  cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnology, Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cell indicates that the compound of the invention inhibits vascular endothelial cells.

The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

*Example 27: Rat Corneal Wound Healing Model*

This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

- a) Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.
- b) Inserting a spatula below the lip of the incision facing the outer corner of the eye.
- c) Making a pocket (its base is 1-1.5 mm from the edge of the eye).
- d) Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.
- e) Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

The studies described in this example tested activity of agonists or antagonists of the



invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

*Example 28: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing Models*

5

*A. Diabetic db+/db+ Mouse Model.*

To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. *et al.*, *J. Surg. Res.* 52:389 (1992); Greenhalgh, D.G. *et al.*, *Am. J. Pathol.* 136:1235 (1990)).

The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman *et al.* *Proc. Natl. Acad. Sci. USA* 77:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel *et al.*, *J. Immunol.* 120:1375 (1978); Debray-Sachs, M. *et al.*, *Clin. Exp. Immunol.* 51(1):1-7 (1983); Leiter *et al.*, *Am. J. of Pathol.* 114:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. *et al.*, *Exp. Neurol.* 83(2):221-232 (1984); Robertson *et al.*, *Diabetes* 29(1):60-67 (1980); Giacomelli *et al.*, *Lab Invest.* 40(4):460-473 (1979); Coleman, D.L., *Diabetes* 31 (Suppl):1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel *et al.*, *J. Immunol.* 120:1375-1377 (1978)).

The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, *et al.*, *Am. J. of Pathol.* 136:1235-1246 (1990)).

Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic

(db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., *J. Exp. Med.* 172:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.

Wound closure is analyzed by measuring the area in the vertical and horizontal axis and

obtaining the total square area of the wound. Contraction is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is 64mm<sup>2</sup>, the corresponding size of the dermal punch. Calculations are made using the following formula:

5

$$[\text{Open area on day 8}] - [\text{Open area on day 1}] / [\text{Open area on day 1}]$$

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome.

10 Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and  
15 epidermal maturity (Greenhalgh, D.G. *et al.*, *Am. J. Pathol.* 136:1235 (1990)). A calibrated lens micrometer is used by a blinded observer.

Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is  
20 determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.

Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue  
25 control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.

Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is  
30 considered significant.

### *B. Steroid Impaired Rat Model*

The inhibition of wound healing by steroids has been well documented in various *in vitro* and *in vivo* systems (Wahl, Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl *et al.*, *J. Immunol.* 115: 476-481 (1975); Werb *et al.*, *J. Exp. Med.* 147:1684-1694 (1978)). Glucocorticoids retard wound healing by inhibiting angiogenesis, decreasing vascular permeability (Ebert *et al.*, *Am. Intern. Med.* 37:701-705 (1952)), fibroblast proliferation, and collagen synthesis (Beck *et al.*, *Growth Factors.* 5: 295-304 (1991); Haynes *et al.*, *J. Clin. Invest.* 61: 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes *et al.*, *J. Clin. Invest.* 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck *et al.*, *Growth Factors.* 5: 295-304 (1991); Haynes *et al.*, *J. Clin. Invest.* 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce *et al.*, *Proc. Natl. Acad. Sci. USA* 86: 2229-2233 (1989)).

To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.

Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The

wounds are left open for the duration of the experiment. Applications of the testing materials are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

5           Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

10           The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

          Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for  
15           histology. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

          Four groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

20           Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is 64mm<sup>2</sup>, the corresponding size of the dermal punch. Calculations are made using the following formula:

25

$$[\text{Open area on day 8}] - [\text{Open area on day 1}] / [\text{Open area on day 1}]$$

Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine  
30           hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or

antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to determine the distance of the wound gap.

Experimental data are analyzed using an unpaired t test. A p value of  $< 0.05$  is considered significant.

5       The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

*Example 29: Lymphadema Animal Model*

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The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb, quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

15

Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

20

25

Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

30

Using a microscope, muscles in back of the leg (near the semitendinosus and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal

and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then and ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people then those 2 readings are averaged. Readings are taken from both control and edematous limbs.

Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and Ca<sup>2+</sup> comparison.

Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

Histological Preparations: The transverse muscle located behind the knee (popliteal) area is dissected and arranged in a metal mold, filled with freezeGel, dipped into cold methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

- 5 The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

10 *Example 30: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention*

- The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and  
15 pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the  
20 local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

- 25 The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

- 30 To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics, San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO<sub>2</sub>. HUVECs are seeded in 96-well



plates at concentrations of  $1 \times 10^4$  cells/well in EGM medium at 37 degree C for 18-24 hrs or until confluent. The monolayers are subsequently washed 3 times with a serum-free solution of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following  
5 incubation, the cells are then evaluated for CAM expression.

Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h  
10 (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100  $\mu$ l of 0.1% paraformaldehyde-PBS(with  $\text{Ca}^{++}$  and  $\text{Mg}^{++}$ ) is added to each well. Plates are held at 4°C for 30 min.

Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10  $\mu$ l of diluted  
15 primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10  $\mu$ g/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

Then add 20  $\mu$ l of diluted ExtrAvidin-Alkaline Phosphatase (1:5,000 dilution) to each  
20 well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100  $\mu$ l of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphatase in glycine buffer:  $1:5,000 (10^0) > 10^{-0.5} > 10^{-1} > 10^{-1.5}$ . 5  $\mu$ l of each dilution is added to triplicate  
25 wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100  $\mu$ l of pNPP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50  $\mu$ l of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the  
30 concentration of AP-conjugate in each standard well [ 5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

The studies described in this example tested activity of agonists or antagonists of the

invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

5     *Example 31: Production Of Polypeptide of the Invention For High-Throughput Screening Assays*

The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 33-42.

10         First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine  
15         solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

       Plate 293T cells (do not carry cells past P+20) at  $2 \times 10^5$  cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

       The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing  
25         a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert  
30         should be transfected with each set of transfections.

       Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on

PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a 12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem 1 complex to the odd wells first, then to the even wells, to  
 5 each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl<sub>2</sub> (anhyd); 0.00130 mg/L CuSO<sub>4</sub>-5H<sub>2</sub>O; 0.050 mg/L of Fe(NO<sub>3</sub>)<sub>3</sub>-9H<sub>2</sub>O; 0.417 mg/L of FeSO<sub>4</sub>-7H<sub>2</sub>O; 311.80 mg/L of KCl; 28.64 mg/L of MgCl<sub>2</sub>; 48.84 mg/L of MgSO<sub>4</sub>; 6995.50 mg/L of NaCl; 2400.0 mg/L of  
 10 NaHCO<sub>3</sub>; 62.50 mg/L of NaH<sub>2</sub>PO<sub>4</sub>-H<sub>2</sub>O; 71.02 mg/L of Na<sub>2</sub>HPO<sub>4</sub>; .4320 mg/L of ZnSO<sub>4</sub>-7H<sub>2</sub>O; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitric Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of  
 15 Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L- Arginine-HCL; 7.50 mg/ml of L-Asparagine-H<sub>2</sub>O; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H<sub>2</sub>O; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L- Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L- Histidine-HCL-H<sub>2</sub>O; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75  
 20 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalanine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tyrosine-2Na-2H<sub>2</sub>O; and 99.65 mg/ml of L- Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00  
 25 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B<sub>12</sub>; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin  
 30 complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust

osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

5 The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

10 On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 33-40.

It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant.

15 Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

*Example 32: Construction of GAS Reporter Construct*

20 One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

25 GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class 1, cells after treatment with IL-12. Stat5 was originally called

30 mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon

tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

5       The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, *Ann. Rev. Biochem.* 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN- $\alpha$ , IFN- $\gamma$ ,  
10   and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xxx-Trp-Ser (SEQ ID NO:1686)).

      Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is  
15   encompassed in the Jaks-STATs signal transduction pathway.

      Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter  
20   molecules, activators of the Jaks-STATs pathway can be identified.

	<u>Ligand</u>	<u>JAKs</u>				<u>STATS GAS(elements) or ISRE</u>	
		<u>tyk2</u>	<u>Jak1</u>	<u>Jak2</u>	<u>Jak3</u>		
	<u>IFN family</u>						
5	IFN-a/B	+	+	-	-	1,2,3	ISRE
	IFN-g		+	+	-	1	GAS
	(IRF1>Lys6>IFP)						
	IL-10	+	?	?	-	1,3	
10	<u>gp130 family</u>						
	IL-6 (Pleiotrohic)	+	+	+	?	1,3	GAS
	(IRF1>Lys6>IFP)						
	IL-11(Pleiotrohic)	?	+	?	?	1,3	
	OnM(Pleiotrohic)	?	+	+	?	1,3	
15	LIF(Pleiotrohic)	?	+	+	?	1,3	
	CNTF(Pleiotrohic)	-/+	+	+	?	1,3	
	G-CSF(Pleiotrohic)	?	+	?	?	1,3	
	IL-12(Pleiotrohic)	+	-	+	+	1,3	
20	<u>g-C family</u>						
	IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
	IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1 = IFP
	>>Ly6)(IgH)						
	IL-7 (lymphocytes)	-	+	-	+	5	GAS
25	IL-9 (lymphocytes)	-	+	-	+	5	GAS
	IL-13 (lymphocyte)	-	+	?	?	6	GAS
	IL-15	?	+	?	+	5	GAS
	<u>gp140 family</u>						
30	IL-3 (myeloid)	-	-	+	-	5	GAS
	(IRF1>IFP>>Ly6)						
	IL-5 (myeloid)	-	-	+	-	5	GAS
	GM-CSF (myeloid)	-	-	+	-	5	GAS

510

Growth hormone family

	GH	?	-	+	-	5	
	PRL	?	+/-	+	-	1,3,5	
5	EPO	?	-	+	-	5	GAS(B-
	CAS>IRF1=IFP>>Ly6)						

Receptor Tyrosine Kinases

	EGF	?	+	+	-	1,3	GAS (IRF1)
10	PDGF	?	+	+	-	1,3	
	CSF-1	?	+	+	-	1,3	GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 33-34, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

10 5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCC  
GAAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO:1687)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO:1688)

15 PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

20 5':CTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAA  
TGATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCCG  
CCCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTTCT  
CCGCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCC  
TCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTA  
25 GGCTTTTGCAAAAAGCTT:3' (SEQ ID NO:1689)

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter  
30 molecules that can be used instead of SEAP include chloramphenicol



acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and  
5 XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-  
10 SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding  
15 as described in Examples 33-34.

Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 35 and 36. However, many other promoters can be substituted using the protocols described  
20 in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, IL-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

25

*Example 33: High-Throughput Screening Assay for T-cell Activity.*

The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention  
30 proliferates and/or differentiates T-cells. T-cell activity is assessed using the

GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC  
5 Accession No. CRL-1582) cells can also be used.

Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately  
10 20,000 cells per well and transfectants resistant to 1 mg/ml gentamicin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

Specifically, the following protocol will yield sufficient cells for 75 wells  
15 containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

20 During the incubation period, count cell concentration, spin down the required number of cells ( $10^7$  per transfection), and resuspend in OPTI-MEM to a final concentration of  $10^7$  cells/ml. Then add 1ml of  $1 \times 10^7$  cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

25 The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Gentamicin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 31.

30 On the day of treatment with the supernatant, the cells should be washed and

resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.

5           Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

          After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12  
10   channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

          The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul  
15   samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 37. The plates containing the remaining treated cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

20           As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

          The above protocol may be used in the generation of both transient, as well as, stable transfected cells, which would be apparent to those of skill in the art.

25

*Example 34: High-Throughput Screening Assay Identifying Myeloid Activity*

          The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention  
30   proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using

the GAS/SEAP/Neo construct produced in Example 32. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

- 5 To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 32, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest  $2 \times 10^7$  U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml  
10 penicillin and 100 mg/ml streptomycin.

Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM  $\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$ , 1 mM  $\text{MgCl}_2$ , and 675 uM  $\text{CaCl}_2$ . Incubate at 37 degrees C for 45 min.

- 15 Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.

The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

- 20 These cells are tested by harvesting  $1 \times 10^8$  cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of  $5 \times 10^5$  cells/ml. Plate 200 ul cells per well in the 96-well plate (or  $1 \times 10^5$  cells/well).

- Add 50 ul of the supernatant prepared by the protocol described in Example  
25 31. Incubate at 37 degree C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 37.

- 30 *Example 35: High-Throughput Screening Assay Identifying Neuronal Activity.*

When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1 (early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.

Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat pheochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 1690)  
5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 1691)

Using the GAS:SEAP/Neo vector produced in Example 32, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter

sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 31. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as  $5 \times 10^5$  cells/ml.

Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to  $1 \times 10^5$  cells/well). Add 50 ul supernatant produced by Example 31, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 37.

*Example 36: High-Throughput Screening Assay for T-cell Activity*

NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF-KB  
5 regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- KB appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

In non-stimulated conditions, NF- KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I- KB is phosphorylated and degraded,  
10 causing NF- KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- KB include IL-2, IL-6, GM-CSF, ICAM-1 and class I MHC.

Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants  
15 produced in Example 31. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

To construct a vector containing the NF-KB promoter element, a PCR based  
20 strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO:1692), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:

5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGAC  
25 TTTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO:1693)

The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTGTCAAAGCCTAGGC:3' (SEQ ID NO:1688)

PCR amplification is performed using the SV40 promoter template present in  
30 the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is

digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene)  
Sequencing with the T7 and T3 primers confirms the insert contains the following  
sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTCC  
5 ATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCCTAACTCCGCCC  
ATCCCGCCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCCATGGCTGA  
CTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTA  
TTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAA  
GCTT:3' (SEQ ID NO:1694)

10 Next, replace the SV40 minimal promoter element present in the pSEAP2-  
promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and  
HindIII. However, this vector does not contain a neomycin resistance gene, and  
therefore, is not preferred for mammalian expression systems.

In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP  
15 cassette is removed from the above NF-KB/SEAP vector using restriction enzymes  
Sall and NotI, and inserted into a vector containing neomycin resistance. Particularly,  
the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the  
GFP gene, after restricting pGFP-1 with Sall and NotI.

Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are  
20 created and maintained according to the protocol described in Example 33. Similarly,  
the method for assaying supernatants with these stable Jurkat T-cells is also described  
in Example 33. As a positive control, exogenous TNF alpha (0.1, 1, 10 ng) is added to  
wells H9, H10, and H11, with a 5-10 fold activation typically observed.

#### 25 *Example 37: Assay for SEAP Activity*

As a reporter molecule for the assays described in Examples 33-36, SEAP  
activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the  
following general procedure. The Tropix Phospho-light Kit supplies the Dilution,  
30 Assay, and Reaction Buffers used below.



Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

- 5 Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the table below).. Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it
- 10 takes about 10 minutes to read 5 plates on luminometer, one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

#### 15 Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6

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23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

---

*Example 38: High-Throughput Screening Assay Identifying Changes in Small*

*Molecule Concentration and Membrane Permeability*

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules. such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

10       The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

15       For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO<sub>2</sub> incubator for 20 hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

20       A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4 , 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO<sub>2</sub> incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

25       For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to  $2-5 \times 10^6$  cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to  $1 \times 10^6$  cells/ml, and dispensed into a microplate. 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to  
30   100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4 . The supernatant is added to the well, and a change in fluorescence is detected.

To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular  $\text{Ca}^{++}$  concentration.

*Example 40: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity*

The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase (RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine

kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

Seed target cells (e.g., primary keratinocytes) at a density of approximately  
5 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St.  
10 Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford, MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from  
15 Becton Dickinson (Bedford, MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium.  
20 Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 31, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na<sub>3</sub>VO<sub>4</sub>, 2 mM Na<sub>4</sub>P<sub>2</sub>O<sub>7</sub> and a cocktail of protease inhibitors (# 1836170) obtained from  
25 Boehringer Mannheim (Indianapolis, IN) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4°C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on  
30 ice. To obtain extracts clarified by centrifugation, the content of each well, after

detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg<sub>2</sub><sup>+</sup> (5mM ATP/50mM MgCl<sub>2</sub>), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM MgCl<sub>2</sub>, 5 mM MnCl<sub>2</sub>, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate(1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mM EDTA and place the reactions on ice.

Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavidin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phosphotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound

peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

*Example 41: High-Throughput Screening Assay Identifying Phosphorylation Activity*

5

As a potential alternative and/or compliment to the assay of protein tyrosine kinase activity described in Example 40, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

15 Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

25 A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 31 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit)

30

antibody (1 µg/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing  
5 reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule induced by polypeptide of the present invention.

*Example 42: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation*

10

This assay is based on the ability of human CD34+ to proliferate in the presence of hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

It has been previously shown that most mature precursors will respond to only  
15 a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone  
20 has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested polypeptide has a stimulatory effect on a hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low  
25 level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

30 Briefly, CD34+ cells are isolated using methods known in the art. The cells



are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to  $2.5 \times 10^5$  cells/ml. During this time, 100  $\mu$ l of  
5 sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems, Minneapolis, MN, Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems, Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10  $\mu$ l of prepared cytokines, 50  $\mu$ l of the supernatants prepared in Example 31  
10 (supernatants at 1:2 dilution = 50  $\mu$ l) and 20  $\mu$ l of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100  $\mu$ l. The plates are then placed in a 37°C/5% CO<sub>2</sub> incubator for five days.

Eighteen hours before the assay is harvested, 0.5  $\mu$ Ci/well of [3H] Thymidine is added in a 10  $\mu$ l volume to each well to determine the proliferation rate. The  
15 experiment is terminated by harvesting the cells from each 96-well plate to a filtermat using the Tomtec Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60  $\mu$ l Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film. A bar code 15 sticker is affixed to the first plate for  
20 counting. The sealed plates is then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could  
25 easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.  
30 In contrast, potential agonists tested in this assay would be expected to enhance cell

proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are  
5 useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein.

*Example 43: Assay for Extracellular Matrix Enhanced Cell Response (EMECCR)*

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The objective of the Extracellular Matrix Enhanced Cell Response (EMECCR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

15

Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM. Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is  
20 dependent upon their interaction with the stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the  $\alpha_5\beta_1$  and  $\alpha_4\beta_1$  integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and responsible for stimulating stem cell self-renewal has not yet been identified. Discovery of such factors should  
25 be of great interest in gene therapy and bone marrow transplant applications

Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of  $0.2 \mu\text{g}/\text{cm}^2$ . Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control,

conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 31), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernates represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment ( 5% CO<sub>2</sub>, 7% O<sub>2</sub>, and 88% N<sub>2</sub> ) tissue culture incubator for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACScan.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or agonists and/or antagonists thereof, may also be employed to inhibit the proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

*Example 44: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation*

10

The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNF $\alpha$  stimulation, in order to check for costimulatory or inhibitory activity.

Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100  $\mu$ l culture media. NHDF culture media contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5  $\mu$ g/ml hEGF, 5mg/ml insulin, 1 $\mu$ g/ml hFGF, 50mg/ml gentamycin, 50  $\mu$ g/ml Amphotericin B, 5%FBS. After incubation at 37°C for at least 4-5 hours, culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2% FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50 $\mu$ g/ml Amphotericin B,

30

0.4% FBS. Incubate at 37°C until day 2.

On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest  
5 media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37°C/5% CO<sub>2</sub> until day 5.

Transfer 60µl from each well to another labeled 96-well plate, cover with a plate-sealer, and store at 4°C until Day 6 (for IL6 ELISA). To the remaining 100 µl in  
10 the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10µl). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100  
15 µl/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200 µl/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash  
20 buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50 µl/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker. Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin  
25 1:1000 in Assay buffer, and add 100 µl/well. Cover the plate and incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels. Add 100 µl/well of Enhancement Solution and shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay are tabulated and averaged.

30 A positive result in this assay suggests AoSMC cell proliferation and that the

polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result.

5 For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing and dermal regeneration, as well as the promotion of vasculogenesis, both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of,

10 for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign

15 tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; arteriosclerotic plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uveitis and Pterygia (abnormal blood vessel growth) of the eye;

20 rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia;

25 hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

One skilled in the art could easily modify the exemplified studies to test the

30 activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or

antagonists and fragments and variants thereof.

*Example 45: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells*

5

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100  $\mu$ l of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10  $\mu$ l volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100  $\mu$ l of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10  $\mu$ l of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10  $\mu$ g/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20  $\mu$ l of diluted ExtrAvidin-Alkaline

Phosphatase (1:5,000 dilution, referred to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphatase in glycine buffer: 1:5,000 ( $10^0$ ) >  $10^{-0.5}$  >  $10^{-1}$  >  $10^{-1.5}$ . 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNPP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [ 5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

#### *Example 46: Alamar Blue Endothelial Cells Proliferation Assay*

This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37-C overnight. After the



overnight incubation of the cells, the growth media is removed and replaced with GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM ) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated  
5 with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

10 Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced  
15 (fluorescent red) form. i.e. stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity. The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and  
20 protein dilutions.

*Example 47: Detection of Inhibition of a Mixed Lymphocyte Reaction*

This assay can be used to detect and evaluate inhibition of a Mixed  
25 Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides

since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These  
5 include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

10 Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM<sup>®</sup>, density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to  $2 \times 10^6$  cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is  
15 adjusted to  $2 \times 10^5$  cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50  $\mu$ l) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1  $\mu$ g/ml; anti-CD4 mAb (R&D  
20 Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10  $\mu$ g/ml. Cells are cultured for 7-8 days at 37°C in 5% CO<sub>2</sub>, and 1  $\mu$ C of [<sup>3</sup>H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

25 Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

One skilled in the art could easily modify the exemplified studies to test the  
30 activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or

antagonists and fragments and variants thereof.

It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above  
5 teachings and, therefore, are within the scope of the appended claims.

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. Further, the hard copy of the sequence  
10 listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. Moreover, the hard copy of and the corresponding computer readable form of the Sequence Listing of Serial No. 60/124,270 are also incorporated herein by reference in their entireties.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209059
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States) Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable) The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<b>For receiving Office use only</b> <input checked="" type="checkbox"/> This sheet was received with the international application  Authorized officer <b>John M. Powell</b> <b>PCT/Intell. Appl. Processing Div.</b> <b>(703) 605-6060</b>	<b>For International Bureau use only</b> <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 209059****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

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ATCC Deposit No. 209059

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application I	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209060
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

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**ATCC Deposit No. 209060****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.



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ATCC Deposit No. 209060

#### **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

#### **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

#### **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application N°	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209061
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States) Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable) The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only <input checked="" type="checkbox"/> This sheet was received with the international application  Authorized officer PCT/International App. Processing Div. (703) 305-6639	For International Bureau use only <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 209061****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209061

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>10801 University Boulevard</u> <u>Manassas, Virginia 20110-2209</u> <u>United States of America</u>	
Date of deposit <u>20 May 1997</u>	Accession Number <u>209062</u>
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States)	
<u>Europe</u> In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only <input checked="" type="checkbox"/> This sheet was received with the international application  <u>Jerry McDowell</u> Authorized officer <u>PCT/Internat'l Appl. Processing Div.</u> <u>(703) 305-3539</u>	For International Bureau use only <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 209062****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209062

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application number	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209063
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

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Authorized officer PCT/Intemat'l Appl Processing Div. (703) 305-3639	Authorized officer



**ATCC Deposit No. 209063****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209063

#### **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

#### **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

#### **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u> .	
B. IDENTIFICATION OF DEPOSIT <span style="float: right;">Further deposits are identified on an additional sheet <input type="checkbox"/></span>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209064
C. ADDITIONAL INDICATIONS (leave blank if not applicable) <span style="float: right;">This information is continued on an additional sheet <input type="checkbox"/></span>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<p>For receiving Office use only</p> <p><input checked="" type="checkbox"/> This sheet was received with the international application</p> <p>Authorized officer PCT/Internal Model Processing Div. (703) 305-3039</p>	<p>For International Bureau use only</p> <p><input type="checkbox"/> This sheet was received by the International Bureau on:</p> <p>Authorized officer</p>
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**ATCC Deposit No. 209064****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209064

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209065
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer Processing Div. (703) 305-5639	Authorized officer

**ATCC Deposit No. 209065****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

**Page 2**

**ATCC Deposit No. 209065**

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.



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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209066
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<input checked="" type="checkbox"/> For receiving Office use only <input checked="" type="checkbox"/> This sheet was received with the international application  Authorized officer PCT/International Processing Div. (703) 305-6639	<input type="checkbox"/> For International Bureau use only <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 209066****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209066

#### **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

#### **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

#### **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application I	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209067
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer Processing Div. (703) 365-6359	Authorized officer

**ATCC Deposit No. 209067****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209067

#### **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

#### **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

#### **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application?	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209068
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<input checked="" type="checkbox"/> For receiving Office use only This sheet was received with the international application	<input type="checkbox"/> For International Bureau use only This sheet was received by the International Bureau on:
Authorized officer PCT/US00/05882 Processing Div. (703) 308-3339	Authorized officer

**ATCC Deposit No. 209068****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.



Page 2

ATCC Deposit No. 209068

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

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569

Applicant's or agent's file reference number	PA106PCT	International application?	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 20 May 1997	Accession Number 209069
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer: Janet McDermott PCT/International Application Processing Div. (703) 305-8630	Authorized officer

**ATCC Deposit No. 209069****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

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ATCC Deposit No. 209069

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 12 January 1998	Accession Number 209579
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<p>For receiving Office use only</p> <p><input checked="" type="checkbox"/> This sheet was received with the international application</p> <p>Authorized officer Jon McDowell PCT/Internat'l Appl. Processing Div. (703) 305-6639</p>	<p>For International Bureau use only</p> <p><input type="checkbox"/> This sheet was received by the International Bureau on:</p> <p>Authorized officer</p>
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**ATCC Deposit No. 209579****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

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ATCC Deposit No. 209579

**DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

**SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

**NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution <u>American Type Culture Collection</u>	
Address of depositary institution (including postal code and country) <u>10801 University Boulevard</u> <u>Manassas, Virginia 20110-2209</u> <u>United States of America</u>	
Date of deposit <u>12 January 1998</u>	Accession Number <u>209578</u>
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only <input checked="" type="checkbox"/> This sheet was received with the international application  Authorized officer <u>Jerry McDaniel</u> <u>PCT/Int. Appl. Processing Div.</u> <u>(703) 305-2000</u>	For International Bureau use only <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 209578****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 209578

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit  16 July 1998	Accession Number  203067
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<b>For receiving Office use only</b> <input checked="" type="checkbox"/> This sheet was received with the international application Authorized officer: <u>Daryl McDowell</u> PCT/International Appl Processing Div. (703) 305-3333	<b>For International Bureau use only</b> <input type="checkbox"/> This sheet was received by the International Bureau on: Authorized officer:
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**ATCC Deposit No. 203067****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 203067

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit  16 July 1998	Accession Number  203068
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States)  Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable)  The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<b>For receiving Office use only</b> <input checked="" type="checkbox"/> This sheet was received with the international application  Authorized officer Jared McDowell PCT/International App Processing Div. (703) 305-3339	<b>For International Bureau use only</b> <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. 203068****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

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ATCC Deposit No. 203068

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.



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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 1 February 1999	Accession Number 203609
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<p>For receiving Office use only</p> <p><input checked="" type="checkbox"/> This sheet was received with the international application</p> <p>Jerry McDowell Authorized officer PCT/International Appl Processing Div. (703) 305-5639</p>	<p>For International Bureau use only</p> <p><input type="checkbox"/> This sheet was received by the International Bureau on:</p> <p>Authorized officer</p>
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**ATCC Deposit No. 203609**

**CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 203609

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT	
Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 1 February 1999	Accession Number 203610
C. ADDITIONAL INDICATIONS (leave blank if not applicable)	
This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input checked="" type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Jon L. McDaniel Authorized officer PCT/International Appl Processing Div. (703) 305-3539	Authorized officer

**ATCC Deposit No. 203610****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. 203610

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 17 November 1998	Accession Number 203485
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<input checked="" type="checkbox"/> For receiving Office use only This sheet was received with the international application Authorized officer: PCT/International Appl Processing Div. (703) 305-3639	<input type="checkbox"/> For International Bureau use only This sheet was received by the International Bureau on: Authorized officer
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**ATCC Deposit No. 203485****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement; or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.



Page 2

ATCC Deposit No. 203485

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 18 June 1999	Accession Number PTA-252
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States) Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable) The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<input checked="" type="checkbox"/> For receiving Office use only This sheet was received with the international application Authorized officer Jeryl M. Caswell PCT/Internet Appl Processing Div. (703) 305-3639	<input type="checkbox"/> For International Bureau use only This sheet was received by the International Bureau on: Authorized officer
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**ATCC Deposit No. PTA-252****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. PTA-252

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

<b>A.</b> The indications made below relate to the microorganism referred to in the description on page <u>121</u> . line <u>N/A</u>	
<b>B. IDENTIFICATION OF DEPOSIT</b> Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 18 June 1999	Accession Number PTA-253
<b>C. ADDITIONAL INDICATIONS</b> (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
<b>D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE</b> (if the indications are not for all designated States)	
Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
<b>E. SEPARATE FURNISHING OF INDICATIONS</b> (leave blank if not applicable)	
The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<b>For receiving Office use only</b> <input checked="" type="checkbox"/> This sheet was received with the international application  Jeryl McDowell Authorized officer PCT/US00/05882 Appl Processing Div. (703) 305-5639	<b>For International Bureau use only</b> <input type="checkbox"/> This sheet was received by the International Bureau on:  Authorized officer
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**ATCC Deposit No. PTA-253****CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. PTA-253

## DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

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Applicant's or agent's file reference number	PA106PCT	International application	UNASSIGNED
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## INDICATIONS RELATING TO A DEPOSITED MICROORGANISM

(PCT Rule 13bis)

A. The indications made below relate to the microorganism referred to in the description on page <u>121</u> , line <u>N/A</u>	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 22 December 1999	Accession Number PTA-1081
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States) Europe In respect to those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28 (4) EPC).	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable) The indications listed below will be submitted to the International Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

<p>For receiving Office use only</p> <p><input checked="" type="checkbox"/> This sheet was received with the international application</p> <p>Authorized officer PCT/International Appl Processing Div. (703) 305-3639</p>	<p>For International Bureau use only</p> <p><input type="checkbox"/> This sheet was received by the International Bureau on:</p> <p>Authorized officer</p>
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**ATCC Deposit No. PTA-1081**

**CANADA**

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

**NORWAY**

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

**AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

**FINLAND**

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

**UNITED KINGDOM**

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

Page 2

ATCC Deposit No. PTA-1081

## **DENMARK**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

## **SWEDEN**

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

## **NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

*What Is Claimed Is:*

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:
- 5 (a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;
- (b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;
- 10 (c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO:X or a polypeptide fragment encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;
- 15 (d) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;
- (e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X;
- 20 (f) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X, having biological activity;
- (g) a polynucleotide which is a variant of SEQ ID NO:X;
- 25 (h) a polynucleotide which is an allelic variant of SEQ ID NO:X;
- (i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;
- (j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide
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sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

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3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

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4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence included in the related cDNA clone, which is hybridizable to SEQ ID NO:X.

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5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

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6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

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7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

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9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.
11. An isolated polypeptide comprising an amino acid sequence at least  
5 95% identical to a sequence selected from the group consisting of:
- (a) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;
  - (b) a polypeptide fragment of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone, having biological activity;
  - 10 (c) a polypeptide domain of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;
  - (d) a polypeptide epitope of SEQ ID NO:Y or of the sequence encoded by the cDNA included in the related cDNA clone;
  - (e) a full length protein of SEQ ID NO:Y or of the sequence encoded by the  
15 cDNA included in the related cDNA clone;
  - (f) a variant of SEQ ID NO:Y;
  - (g) an allelic variant of SEQ ID NO:Y; or
  - (h) a species homologue of the SEQ ID NO:Y.
12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.
13. An isolated antibody that binds specifically to the isolated polypeptide  
25 of claim 11.
14. A recombinant host cell that expresses the isolated polypeptide of claim 11.
15. A method of making an isolated polypeptide comprising:
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(a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and

(b) recovering said polypeptide.

5           16.    The polypeptide produced by claim 15.

17.    A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.

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18.    A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

15           (b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19.    A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

20           (a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

25           20.    A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

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21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.
22. A method of identifying an activity in a biological assay, wherein the method comprises:
- 5 (a) expressing SEQ ID NO:X in a cell;
- (b) isolating the supernatant;
- (c) detecting an activity in a biological assay; and
- (d) identifying the protein in the supernatant having the activity.
- 10 23. The product produced by the method of claim 20.

## SEQUENCE LISTING

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Steve Ruben

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<211> 2613

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (896)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1246)

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&lt;210&gt; 9

&lt;211&gt; 1101

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

<222> (730)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (983)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1055)

<223> n equals a,t,g, or c

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<211> 1373

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (1373)

<223> n equals a,t,g, or c

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&lt;210&gt; 11

&lt;211&gt; 3804

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 11

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&lt;210&gt; 12

&lt;211&gt; 2157

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (806)

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<220>

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<222> (846)

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<220>

<221> misc feature

<222> (1517)

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<221> misc feature

<222> (2110)

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<220>

<221> misc feature

<222> (2116)

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<220>

<221> misc feature

<222> (2137)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2150)

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<210> 13

<211> 1117

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (1102)

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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (869)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (884)  
 <223> n equals a,t,g, or c

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 aaggtggtga acgaggagtg cccaccatc acccgcaact acagcctggg caagagctca 240  
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<210> 15  
 <211> 1024  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (938)  
 <223> n equals a,t,g, or c

<220>  
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 <223> n equals a,t,g, or c

<220>  
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 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (1019)  
 <223> n equals a,t,g, or c

<400> 15  
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 gccagatgct caaggaggga gcgaaacact ttccaggatt agaagaggct gtgtatagaa 180  
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 aactaaggga acagtgttga taaagactgc tgaagrattg atgaatttta gtaaggaggr 900  
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<210> 16  
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 <212> DNA  
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<220>  
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 <223> n equals a,t,g, or c

<220>  
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 <222> (45)  
 <223> n equals a,t,g, or c

<220>  
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 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (476)  
 <223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (507)  
<223> n equals a,t,g, or c

<400> 16  
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gctattttta aaggtgtcca gtgtgaggtg cagctgggtg agtctggggg aggcttggtg 240  
aagcctgggg ggtcccttag actctcctgt gcagcctctg gattcacttt cagtaacgcc 300  
tggatgagct ggggtccgcca gggtccaggg aaggggctgg agtggggttg ccgtattaaa 360  
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ctcaagagat gattcaaaaa acacgytgta tytgcaaatg aacagcctga aaaccngagg 480  
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ctttt 545

<210> 17  
<211> 623  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (15)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (613)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (616)  
<223> n equals a,t,g, or c

<400> 17  
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tcaaggagga rgtgggcgaa gaggccatcg tggagctggt ggagaatggg aagaaggtga 420  
aggtgaacaa ggatgacatc cagaagatga acccgcccaa gttctccaag gtggaggaca 480  
tggcagagct cacgtgcctc aacgaagcct cgggtgttgca caacctcaag gagcgttact 540  
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ccgaggtggg ggnngnggcg ggt 623

<210> 18  
<211> 559

<212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (371)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (531)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (544)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (547)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (556)  
 <223> n equals a,t,g, or c

<400> 18  
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 attagtaatt ttaaaatgag grtgggaatt aactaacaga actgatagga agtgttaaca 180  
 tacaacaggg gagtctaaga tggcttccaa ttttacttta gaggggtaag ggtaccatta 240  
 acttaagatc attaatacag raaaattaat cagatttgga gtttaccag gtttgctttt 300  
 ggttgtaaca atgatatatg ataaaattaa atgrataaat aagtgratgc actggtgaat 360  
 taatgagctg ntctcattaa gaccagagta cttatttata acaaaagtaa cttttccctt 420  
 tccctgggta catcaaactg tactccacag ataacagaca ccagtgagtt tttcatggtt 480  
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 gcgngcnacg gtattngga 559

<210> 19  
 <211> 1355  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (55)  
 <223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (1045)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1355)  
<223> n equals a,t,g, or c

<400> 19  
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acaacggcac ctctgccagg gctaccacaa cccagccag caagagcact ccattctcaa 180  
ttcccagcca cactctgat actcctacca cccttgccag ccatagcacc aagactgatg 240  
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cccagttgtc tactgggggtc tctttctttt tctgtcttt tcacatttca aacctccagt 360  
ttaattctc tctggaagat cccagcacg actactacca agagctgcag agagacattt 420  
ctgaaatgtt tttgcagatt tataaacaag ggggttttct gggcctctcc aatattaagt 480  
tcaggccagg atctgtggtg gtacaattga ctctggcctt ccgagaagg accatcaatg 540  
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaan 1355

<210> 20  
<211> 1280  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1043)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1162)  
<223> n equals a,t,g, or c

<400> 20  
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aaaaaaaaac tcaagactag                                     1280

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&lt;210&gt; 21

&lt;211&gt; 1191

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 21

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gctttaactt gctctccttc ctcggggatc acaccttttt aagaaagcct gtccttacc 120
ttgaagcaca aacatattct catttttatt ctccaatac cttgaagggt ttcttctgca 180
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gcattgtgta tattacaaaa cataacaaaa ataatagggg tagggagggt cagatgttgg 720
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gaaagagggg attactaatt ccacaaaaat acagatttaa caaaaacttt tattcaacaa 1080
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catcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaactcgtag g 1191

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&lt;210&gt; 22

&lt;211&gt; 853

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 22

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cttacacagc agcaacagcc tgctacaggg ccacagccat ctctgggagt tagttttgga 60
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atgtaaatat ata 853

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&lt;210&gt; 23

&lt;211&gt; 474

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 23

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ggcacgagct cgtccggccc gtgggtctga cggcttgagt agcgctaggg agaatccctg 60
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ctcctggcgg gactgamcg gcccggackk cggcccgcgt gggccggggc ctkgtkggk 420
gccargaara agcgtcccag gaagccggcc tgccggcaag agcgggcccc agcc 474

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&lt;210&gt; 24

&lt;211&gt; 2280

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (13)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 24

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ctctccccct ccnaccctc ccgctccaag attcgccgcc gccgccggcg cagccgcagg 60
agtagccgcc gccggagccg cgcgcaccca tggccgagaa cccagcttg gagaaccacc 120
gcatcaagag cttcaagaac aagggccggc atgtggaac aatgcgaaga catagaaatg 180
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&lt;210&gt; 25

&lt;211&gt; 1061

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 25

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ggagcagccc cctctgagtc cctcggcctt tgctctctgc ccatccgccc ctgctatggt 360
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gagaaggaag ccatactcg gaggtcgttg gccctgctgg aggaggaggc agaagtcatt 540
aaccagaagc tggcctcgga ccccgccctg cgcacaagct ggtccgcctg tcctccgact 600
ctttcgcccc cctgggtggag ctgttctgta gccgggatga cagctctcgc ccaagccgag 660

```

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catgccccgg gcccccgcct ccttccccgg agcccctggc ccgcctggcc ctagccatgg 720
agctgagccg gcgcgtggcc gggctggggg gcaccctggc cggactcagc gtggagcacg 780
tgcacagctt cacgccctgg atccaggcca cgggggctgg gagggcatcc tggctgtttc 840
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cacctcatgt ccctgccctc ttcgtgtgct ttccaagtc ttctattcc actcagggt 960
gtgggggtgt ggttgcccta cctgtttttg ccaaaaataa attgttttaa acttttctta 1020
ttaaaaacgt tacaaaaaaa aaaaaaaaaam agggggggccg c 1061

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<210> 26

<211> 1572

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (19)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (28)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1491)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1527)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1555)

<223> n equals a,t,g, or c

<400> 26

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ccgccgcgcc ggggggtggg ggggctgcgc gggacttttt tttttttcag actgaccgcg 120
gggcagctgc ggacatgtcg accccggccc ggaggaggct catgcgggat ttcaagcggg 180
tacaagagga cccacctgtg ggtgtcagt gcgcaccatc tgaaaacaac atcatgcagt 240
ggaatgcagt tatatttga ccagaaggga cactttttga agatggtact tttaactag 300
taatagaatt ttctgaagaa tatccaaata aaccaccaac tgtaggttt ttatccaaa 360
tgtttcatcc aaatgtgtat gctgatggta gcatatgttt agatatcctt cagaatcgat 420
ggagtccaac atatgatgta tcttctatct taacatcaat tcagtctctg ctggatgaac 480
cgaatcctaa cagtccagcc aatagccagg cagcacagct ttatcaggaa aacaaacgag 540
aatatgagaa aagagtttcg gccattgttg aacaaagctg gaatgattca taatagacaa 600
ctggtctgtt aatctttttc atcattgttg tgtataattt acctctcatt agaaaggcta 660
acaaatttta agtgccacag gttttaagga ttctgcagaa aaaaaagaaa aaagtccttc 720

```

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agtttagaac ctacaaaagc ttgtgtatct tgattaatgt actttttatt gcatgggtgtg 780
aactaagtta ttgctgcata aatttgtaat atatcctggt tgtatttttt tccaagtgtg 840
taatgttggt gtggagtttt catgacagaa tatacacatt ttgtaaatct gtactttttt 900
caaatattga atgccttatt tttgaattct ttagattttt aaattggaga aaagcactta 960
aagtttttta tatatgaata ttacatgtaa agctgttaaa atacataact tcagtgcaag 1020
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tagtttcaat tgagtaattc tagacataac tggtttgact ctgtccaact ctgtatttag 1260
gccatttggt acagtttctt catgcattac ttactgttaa aactgtacct tttgcgattt 1320
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cacttttaaaa aattttttga ttaatgaagg aaagtaaaac cataaacatt tgccaaaaat 1440
tcatgccccca gtattaggca atggaattag gttgcattgg gtttgaggaa ngggcacatt 1500
ggggggggga atcttggggg gttaacnttt aaattatttt gggaaaattt acccntttta 1560
tggccatggc ct 1572
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<210> 27

<211> 2005

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1976)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1977)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1978)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1979)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1986)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1988)

<223> n equals a,t,g, or c

&lt;400&gt; 27

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gcggacgcgt gggtcgccma cgcgygcgca agcagcgggt tagtggtcgc gcgcccagacc 60
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cgccctccgcc gcctagcgct gttcccgggt gtggcgctgc ttcttgccgc ggcccgccctc 180
ggcgctgcct ccgacgtgct agaactcacg gacgacaact tcgagagtcg catctccgac 240
acgggctctg cgggcctcat gctcgtcgag ttcttcgcyc cctggtgtgg acaactgcaag 300
agacttgcac ctgagtatga agctgcagct accagattaa aaggaatagt cccattagca 360
aagggtgatt gcaactgcaa cactaacacc tgtaataaat atggagtcag tggatatcca 420
accctgaaga tatttagaga tgggaagaa gcagggtgctt atgatggacc taggactgct 480
gatggaattg tcagccactt gaagaagcag gcaggaccag cttcagtgcc tctcaggact 540
gaggaagaat ttaagaaatt cattagtgat aaagatgcct ctatagtagg ttttttcgat 600
gattcattca gtgaggctca ctccgagttc ctaaaagcag ccagcaactt gagggataac 660
taccgatttg cacatacgaa tgttgagtct ctggtgaacg agtatgatga taatggagag 720
ggtatcatct tatttcgtcc ttcacatctc actaacaagt ttgaggacaa gactgtggca 780
tatacagagc aaaaaatgac cagtggcaaa attaaaaagt ttatccagga aaacattttt 840
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atgggaaaac cattggggag gactaggacc catatgggaa ttattacctc tcagggccga 1740
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cactgtttat ggaaatacca ggaccagttt atgtttgtgg ttttgggaaa aattatttgt 1860
gttgggggaa atgttgtggg ggtgggggtg agttgggggt attttcta at tttttttgta 1920
catttggaac agtgacaata aatgagaccc ctttaaaaaa aaaaaaaa aaaaannnnng 1980
gggggnccnc cagtcccat cgccc                                     2005

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&lt;210&gt; 28

&lt;211&gt; 1408

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (11)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 28

```

cccgcagaca ngcaattttc acctgtgagg tccctggtgt ctactacttt gsataccacg 60
ttcactgcaa ggggggcaac gtgtgggttg ctctattcaa gaacaacgag cccgtgatgt 120
acacgtacga cgagtacaaa aagggcttcc tggaccaggc atctgggagt gcagtgtctg 180
tgctcaggcc cgagaccggg tgttcctcca gatgccctca gaacaggctg caggactgta 240

```

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tgccgggcag tatgtccact cctccttttc aggatattta ttgtatccca tgtaaaaaaca 300
aaaaaaacaaa aaacaaagaa aagaaagaga ttttatagaa gaaaatgaca caccaaaaaaa 360
tccaaatgaa aaacataatt gcttcaaaac acttacacag ttggaaagtt atatgtaagt 420
gaaaatttg accatttgtgt acaaataaaa actaagatgc atgtttaata ctccacacag 480
cagcctgtaa ttgcgaatga tgggatatag ttatgtatca agtactgaca cttgggtgta 540
cccactggaa tcatatttagc tgttttatgt tatatgcttc cacagtaacc tgcttattca 600
gatcagtcaa aatatatcag tatgaaagat catagctaata gaaaggcact cactcatatt 660
gtttacttta aaatatattat aaatatgcct taaagaaata caaatgataa caattacata 720
ccgtatttac ttgcttaatt tcctctgtat ttgtgtagat actttgacat ggaatatatg 780
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tatcagttat gcttatatag cattaaaaat tctcctcctt tgactacaca cacaaccaca 1320
gtgtggttct aatcatggag atatcagtaa tttttagtaa ctgarttttg aggacatttc 1380
tctgttttagc atgtatgcaa actggata                                     1408

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&lt;210&gt; 29

&lt;211&gt; 917

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 29

```

ggcacgagcg aggggaggag ccgctggctc ccagccccgc cgcgatgagc ctcggccgcc 60
tttgccgcct actgaagccg gcgctgctct gtggggctct ggcgcgcctt ggcctggccg 120
ggaccatgtg cgcgtcccgg gacgactggc gctgtgcgct ccatgcacga kttttccgcc 180
aaggacatcg acgggcacat ggtaacctg gacaagtacc ggggcttcgt gtgcacgtc 240
accaacgtgg cctcccagtg aggcaagacc gaagtaaaact acactcagct cgtcgacctg 300
cacgcccgat acgctgagtg tggtttgccg atcctggcct tcccgtgtaa ccagttccgg 360
aagcaggagc caggagtaga cgaagagatc aaagagttcg ccgcgggcta caacgtcaaa 420
ttcgatatgt tcagcaagat ctgctgaac ggggacgacg cccaccgct gtggaagtgg 480
atgaagatcc aacccaaggg caaggcatc ctgggaaatg ccatcaagtg gaacttcacc 540
aagtccctca tcgacaagaa cggctgcgtg gtgaagcgct acggaccat ggaggagccc 600
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gagcccctgc ccacgcccty ggagccttcc accggcactc atgacggcct gcctgcaaac 720
ctgctggtgg ggcagaccgg aaaatccagc gtgcaccccg ccggaggaag gtcccatggc 780
ctgctgggct tggctcggcg cccccacccc tggctacctt gtgggaataa acagacaaat 840
tagcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaaaa aaaaaaa                                     917

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&lt;210&gt; 30

&lt;211&gt; 577

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

<222> (501)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (534)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (568)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (575)  
 <223> n equals a,t,g, or c

<400> 30  
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 ggtgactcac atctgtaatc ccagcacttt gggaggccaa ggcaggcaga acacttgaag 120  
 gagtccaaga ccagcgtggc caacgtggtg aacctgtct ctactaaaaa taaaaaatt 180  
 gtttagctct gtttttcata atagaaatag aaaaggtaaa attgcttttc ttctgaaaag 240  
 aacaagtatt gttcatccaa gaagggtttt tgtgactgaa tcagcagtgc ctgccctagt 300  
 catagctgtg cttcagaaac ctcagcatga ttagtgttkg agcmmaacaa ggragcaaag 360  
 caaatwcwgt ttttgaaatt ctatctgttg cttgaactat tttgtaataa ttaactttg 420  
 gatgttgaga aatcacaaact ttattggtac acttcattgc aacttgaaat tccatgggtc 480  
 ttaaagtgag attggaattc naatgggcgg cctttaaaaa gtaattccca accnttaagg 540  
 ttaaacccca ggaaattggg gccaatcnaa aaccngg 577

<210> 31  
 <211> 2059  
 <212> DNA  
 <213> Homo sapiens

<400> 31  
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 actccttttt gcagtggaca caggactata tttctctgtg aagacaaaca ttcgaagctc 180  
 aacaagagac tggaaggacc ataaatttaa atggagaaa gacctcaag acaaagacc 240  
 cccatcccat gggggtaata agagcagtag cagcagcatc tctgaacatt tctctggatt 300  
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 cttcaagcag ggaagcccca gtgagtagct gcattcctag aaattgaagt ttcagrgcta 480  
 cacaacamt tttctgtccc aaccgttccc tcacagcaaa gcaacaatac aggctaggga 540  
 tgaaggagga gtgcaaaara gtgtcccccac cctcctgccc cccgcaccgt ttgcccaccc 600  
 ttcggaagac ccagtgtctg gatgagtatg agtgtgcctg caactgtgtc aatccacagt 660  
 gagctgtccc cttgggtact tggcctcaac cgccaccaat gactgtggct gtaccacaac 720  
 cacctgccct cccgacaagg tgtgtgtcca ccgaagcacc atctaccctg tgggccagtt 780  
 ctgggaggag ggctgcgatg tgtgcacctg caccgacatg gaggatgccg tgatgggcct 840  
 ccgcgtggcc cagtgtctccc agaagccctg tgaggacagc tgtcggtcgg gcttcactta 900



```

cgttctgcat gaaggcgagt gctgtggaag gtgcctgcc tctgcctgtg aggtggtgac 960
tggtctaccg cggggggact cccagtcttc ctggaagagt gtcggctccc agtgggcctc 1020
cccgagaaac ccctgcctca tcaatgagtg tgtccgagtg aaggaggagg tctttataca 1080
acaaaggaac gtctcctgcc cccagctgga ggtccctgtc tgcccctcgg gctttcagct 1140
gagctgtaag acctcagcgt gctgccaag ctgtcgctgt gagcgcatgg aggcctgcat 1200
gctcaatggc actgtcattg ggcccgggaa gactgtgatg atcgatgtgt gcacgacctg 1260
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ctgcaacccc tgccccttg gttacaagga agaaaataac acagggtgaat gttgtgggag 1380
atgtttgcct acggcttgca ccattcagct aagaggagga cagatcatga cactgaagcg 1440
tgatgagacg ctccaggatg gctgtgatac tcacttctgc aagggtcaatg agagaggaga 1500
gtacttctgg gagaagaggg tcacaggctg cccacccttt gatgaacaca agtgtctggc 1560
tgaggggagg aaaattatga aaattccagg cacctgctgt gacacatgtg aggagcctga 1620
gtgcaacgac atcactgcca ggctgcagta tgtcaagggtg ggaagctgta agtctgaagt 1680
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ggtggccctg cactgcacca atggctctgt tgtgtaccat gaggttctca atgccatgga 1860
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ctgctgcctg ccttgctgta tggccaggcc agagtgtgc cagtcctctg catgttctgc 1980
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aaaaaaaaa aaaaaaaaaa
2059

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<210> 32

<211> 549

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (337)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (378)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (497)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (537)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (546)

<223> n equals a,t,g, or c

&lt;400&gt; 32

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tctagaggat ccaagcttac gtacgcgtgc atgcgacgtc atagctcttc tatagtgtca 180
cctaaattca attcactggc cgctggttta caacgtcgtg actgggaaaa ccctggcggt 240
acccaactta atcgccctgc agcacatccc cctttcgcca gctggcgtaa tagcgaagag 300
gcccgcaccg attcgccctt tcccaacagt tgcgcancgt gaatggcgaa tggggacgcg 360
ccctgtatgg gcgcgttnaa gcgcggcggg tgtggtggtt acgcgcagtg gaccgcgtac 420
acttgccagc gccctagcgc ccgctccttt cgctttcttc ccttcctttc tcgccacgtt 480
cgccggcctt ccccttnaag ctctaaatcg gtgggctccc tttaggtgtc ctatttngtg 540
ctttanggt 549
```

&lt;210&gt; 33

&lt;211&gt; 841

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 33

```
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atcaccttgc tctgcgatag attatccaaa ggtggccgtc tctgcctaag taccgatgca 120
gcagccccac agaccatggt catgccaggt ggtgtacta caatcccaga gtcagaccta 180
gaagaaagat cagtagaaca agactctaca gaactgttta ccaaccacag acatctcact 240
gcagagacac ccaggcctgt ttcaccctc caaggagtct cggaataatt ccaagtagag 300
ttgtttggtt gagaggaaca tccccatctc aaggccgaac ctgtgtgaac ctcatgcca 360
gcacagatat arggctggcg cagggtgctc cyaaagctya ccttcctgga gatgacatgc 420
atagaaagag gggttgggac tttttacttc actaggagaa cttgtaacac catggggaag 480
tcagctgaaa ctgtcttgt tttgccagga aaggaagtag ttgcctttgg tcatccatct 540
gctaatagtc acagaataca gtgaaatgac atagttttg gttagatttt ataatgcaa 600
gattcagatc caaaataatt tcatacccca ttttttcaca gaattcttat atagtaaatg 660
tatcaagttt aataaagcat ctcatgtca aataatatct tggattttat ttataattag 720
agggatttat gagtgattgc tctacattat ttcttcaaag gaaaggaaag gaattgaaga 780
ctttgctact ctctggtaag acttgaatgt gattatttta taaataaaag aaccactatg 840
a 841
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&lt;210&gt; 34

&lt;211&gt; 863

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (19)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (29)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (44)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (58)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 34

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accaaaaaag ctttggagnt ttccaaccnc cggtttgcg cccngttttt tagaactnag 60
tggaatcccc cgggggcttt caaggaattc ggcacgagtt tgcttaggcg cagacgggga 120
agcggagcca acatgccagt ggcccggagc tgggtttgtc gcaaaactta tgtgaccccg 180
cggagaccct tcgagaaatc tcgtctcgac caagagctga agctgacgag cgagtatggg 240
ctccggaaca aacgtgaggt ctggagggtc aaattttacc tggccaagat ccgcaaggcc 300
gcccgggaac tgctgacgct tgatgagaag gacccacggc gtctgttcga aggcaacgcc 360
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aatgccaaag agggccaggg tggggctggg gctggagacg acgaggagga ggattaagtc 720
cacctgtccc tcctgggctg ctggattgtc tcgttttctt gccaaataaa caggatcagc 780
gctttacaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa ttt 863
```

&lt;210&gt; 35

&lt;211&gt; 1230

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 35

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1230

<210> 36

<211> 640

<212> DNA

<213> Homo sapiens

<400> 36

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<210> 37

<211> 597

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (15)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (32)

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<222> (556)

<223> n equals a,t,g, or c

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<221> misc feature

<222> (558)

<223> n equals a,t,g, or c

<220>

<221> misc feature  
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 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (590)  
 <223> n equals a,t,g, or c

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 gtccggcagc gccagcccta cactcgcccc cgccatggcc tctgtctccg agctcgccctg 180  
 catctactcg gccctcatte tgcacgacga tgagggtgaca gtcacggagg ataagatcaa 240  
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 ggccctggcc aacgtcaaca ttgggagcct catctgcaat gtaggggccg gtggacctgc 360  
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 tgaggagaag aaagtggaag caaagaaaga agaatccgag gagtctgatg atgacatggg 480  
 ctttggtctt ttgactaaa cctcttttat aacatggtca ataaaaagct gaactttaaa 540  
 aaaaaaaaaa aaaaancncg ggggggncg ctttaaaggg tccaagttan gtacggg 597

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 <211> 624  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (79)  
 <223> n equals a,t,g, or c

<400> 38  
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 gaggagacca tcgagggcat gctcctcagg ctggaagagt ttgacgcct ggctgacctg 180  
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 camctgsacc kgtgcccgtg acgtacgagc tgcccacact gtataggacg gaggactatt 480  
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<210> 39  
 <211> 1029  
 <212> DNA  
 <213> Homo sapiens

<400> 39  
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gaaaggctgc aaaaagaaaa agagacgcag tgagtgggaa aagtatgcat cctattcaaa 240
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<210> 40

<211> 1107

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1098)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1106)

<223> n equals a,t,g, or c

<400> 40

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tggaatgctg tttgcacgct aggtgtactt ttcttttatt tacctatggt tggggcaagg 300
ggaaatgata tgcaagatac aacttagttg ttgcaaataa gaagtgtaat ccatggtgat 360
ttattagcca tttcctgctg ttgatwatgt tacacatgty catttactca aaaacgtgtt 420
tatgtctgga gtactacctt agtagcttgc tgtggttgct tccagaactg ccgagctgta 480
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ttcctcagct ccagggtac ctgcgatctg tgtttgctct gacgaatgga atttatctc 960
acaaattggt gttctaaatg tcttaagaac ctaattaaat agctgactac aaaaaaaaaa 1020

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<210> 41

<211> 1051

<212> DNA

<213> Homo sapiens

<400> 41

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 atggaatgaa acatgccaca ggaaactaca tcattattat ggatgctgat ctctcacacc 360  
 atccaaaatt tattcctgaa tttattagga agcaaaagga ggtaatttt gatattgtct 420  
 ctggaactcg ctacaaagga aatggaggtg tatatggctg ggatttgaaa agaaaaataa 480  
 tcagccgtgg ggccaatttt ttaactcaga tcttgctgag accaggagca tctgatttaa 540  
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 ttttttttgc ataaarwaaa aaaaaaaaaac c 1051

<210> 42

<211> 2192

<212> DNA

<213> Homo sapiens

<400> 42

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<210> 43

<211> 353

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (37)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (348)

<223> n equals a,t,g, or c

<400> 43

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catggtggct gaaaagcggc tcatcccaga tggctgtggg gtcaagtaca tcccagtcg 180
tggccctctg gacaagtggc gggccctgca ctcatgaggg cttccaatgt gctgcccccc 240
tcttaatact caccaataaa ttctacttcc tgtccaaaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaanaa aag 353

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<210> 44

<211> 3490

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature



<222> (782)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1311)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2298)

<223> n equals a,t,g, or c

<400> 44

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gtttgagacc ctgttactgt ttgaaaatgc atgcatgtta cgatgaatct ccaacctgag 3420
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<210> 45

<211> 781

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (750)

<223> n equals a,t,g, or c

<400> 45

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ttcagagctc cctccagggt ccctgagtag atcatgtgct cctgagagtt ttaaggga 240
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gtcattcact taccaagtat ttctctgctt tctgccatgt cacgggscca tgatccccctg 360
gagattgagg gaaataagat cacaggagct cccagtctga gtgagaaaag gcagctgctc 420
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aggagtgggc gttgctggac cctgccccaa ggacactgta cagggtgtg atgctggaga 660
actgcaggac ctggcctcac targgtgtcg tgttaataaa cccagtctga tatcccagtt 720
ggamcaagac aagaagktgg tgacagaggn aagaggaatc taccaagcac ctgtccagat 780
t                                     781

```

<210> 46

<211> 1431

<212> DNA

<213> Homo sapiens

<400> 46

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ttattgaaaa tgaagagcag gaatatgttc aaactgtgaa gtcattccaa ggtggtcccg 180
gatcagcggg gagcccctat cctaccttca atccatcctc ggatgtcgct gccttgcata 240
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catttttata ttataactct gtataataga gataagtcca ttttttaaaa atgttttccc 1320
caaaccataa aaccctatac aagttgttct agtaacaata catgagaaag atgtctatgt 1380
agctgaaaat aaaatgacgt cacaagacaa aaaaaaaaaa aaaaaaaaaa a 1431
```

<210> 47

<211> 1913

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (43)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1878)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1896)

<223> n equals a,t,g, or c

<220>

<221> misc feature

&lt;222&gt; (1905)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1907)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 47

```

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cttcatgcct gtcctgggat ttggcaccta tgcgcctgca gaggttccta aaagtaaagc 180
tytagaggcc rycaaattgg caatwgaagc yggsttcrc catattgatt ctgcwcatkt 240
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gctcttgagg gacccagtc tttgtgcctt ggcaaaaaag cacaagcgaa cccagccct 840
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cctggaatct ttggatgtgt gccagttca cagattggac cctattggtt tgtggtgggg 1860
ccagggcatc caaagacntc attggactaa ttcaacnttc cccgnanagc ccc 1913

```

&lt;210&gt; 48

&lt;211&gt; 1761

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 48

```

cgaggagctc tgaggctctat gctcagctgt gcaacgtggc tcgcattgag gcagagcggg 60
aggccggggg ccacttccgg ccaggctatg agtatggccc cgggcccgat gacctgcact 120
acagcatcta tggcccagat ggggccccct tctacaacta cctgggcccc gaggacaccg 180

```

```

tccctgagcc tgccttcccc aacacagccg gtcactcagc ggaccgcaca cccatccttg 240
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cagccggcctt cgaagggtt caggcggagg agtgcggcat cctgaacggc tgtgagaatg 360
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atgcggccca catggcctgc gtagatgtga atgagtgtga tgacttgaac gggcctgctg 480
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aaaaaaaaaa aaaaaaaaaa g
1761

```

<210> 49

<211> 956

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (37)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (352)

<223> n equals a,t,g, or c

<400> 49

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tcggcccgcga gagcttgccc cctccccacc cgcagacatg tccgagtcca agagcgcccc 180
cgagtatgct tcgtttttcg ccgtcatggg cgctcggcc gccatggtct tcagcgccct 240
ggcgctgccc tatggcacag ccaagagcgg taccggcatt gcggccatgt ctgtcatgcg 300
gccggagcag atcatgaaat ccatcatccc agtgggtcat gctggcatca tngycatcta 360
cggcctgggt gtggcagttc tcatcgccaa ctccctgaat gacgacatca gcctctacaa 420

```

```

gagcttcctc cagctgggcg ccggcctgag cgtgggcctg agcggcctgg cagccggctt 480
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cgtgggcatg atcctgattc tcctcttcgc cgagggtgctc ggccctctacg gtctcatcgt 600
cgccctcatc ctctccacaa agtagacctt ctccgagccc accagccaca gaatattatg 660
traagaccac cctcctcatc cgccccctca ggcccccggc gccccacccc ctagagtgtc 720
ctgtgtatgc ggatgattta gaattgtcat ttctctttac tggatgttta ttataaaga 780
tctggcctgt tcctgcgtct gcggagcggc ccttgctctc cagctatcta taaccttagc 840
tagagtgtcg ccttggtggg tcctgttgct gagacttcct ggatggagcc gccctcaccg 900
wmcgkcccgt ggccctgcgc ggagctgtgt ccaataaagt tcttgatgt gaaaaa 956

```

<210> 50

<211> 563

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (510)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (519)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (530)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (558)

<223> n equals a,t,g, or c

<400> 50

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cggacgcgtg ggcgccctcc gaatccagag aggcgctgct gacaccgccg ccacaccgcc 60
gccacaccgc cgtgcctca gtcattgccga agcagagatt ctctgtggac atgacctgtg 120
gaggctgtgc tgaagctgtc tctcgggtcc tcaataagct tggaggagtt aagtatgaca 180
ttgacctgcc caacaagaag gtctgcattg aatctgagca cagcatggac actctgcttg 240
caaccctgaa gaaaacagga aagactgttt cctaccctgg ccttgagtag caggggcctg 300
gtccccacag cccacaggat ggaccaaagg gggcaggatg ctgatcctcc cgctggcttc 360
cagacagacc tgggacttgg cagtcattgcc gggatgatgt gttcctgcgg agaccctcag 420
ttgtcctatt ccttcctagc ttccctgcaa taaaatcaag ctgcttttgt tggaaaaaaa 480
aaaaaaaaaa gggggcgtct aaaaaccaan ttatttcnt gatgaaatcn acctctttgt 540
tccattcat ccggcctnaa aaa 563

```

<210> 51

<211> 3215

<212> DNA

<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3196)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 51

```
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cgactgcgc ctgtcagtag tggacattgt aatccagtcg gcttgttctt gcagcattcc 120
cgctcccttc cctccatagc cacgctccaa accccagggt agccatggcc gggtaaagca 180
agggccattt agattaggaa ggtttttaag atccgcaatg tggagcagca gccactgcac 240
aggaggaggt gacaaacat ttccaacagc aacacagcca ctaaaacaca aaaaggggga 300
ttgggcggaa agtgagagcc agcagcaaaa actacatttt gcaacttggt ggtgtggatc 360
tattggctga tctatgcctt tcaactagaa aattctaatt attggcaagt cacgttggtt 420
tcagggtccag agtagtttct ttctgtctgc tttaaatggr aacagactca taccacactt 480
acaattaagg tcaagcccag aaagtgataa gtgcagggag gaaaagtgc agtccattat 540
gtaatagtga cagcaaagg accaggggag aggcattgcc ttctctgccc acagtctttc 600
cgtgtgattg tctttgaatc tgaatcagcc agtctcagat gcccacaaat ttcggttctt 660
atgagcccgg ggcattgatc gatccccaag acatgtggag gggcagcctg tgcctgcctt 720
tgtgtcagaa aaaggaaacc acagtgcagc tgagagagac ggcgattttc gggctgagaa 780
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tcttagaaga tagcatggga ggtgaggatt ccaaaaacat tttattttta aaatatcctg 2640
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atactgtgaa aatgtttttac attccatttc atttgtgttg tttttttaac tgcattttac 3060
cagatgtttt gatgttatcg cttatgttaa tagtaattcc cgtacgtgtt cattttattt 3120
tcatgctttt tcagccatgt atcaatattc acttgactaa aatcactcaa ttaatcaawa 3180
aaaaaaaaaa aaaccncggg ggggggcccc gaacc 3215

```

<210> 52

<211> 626

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (571)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (572)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (573)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (618)

<223> n equals a,t,g, or c

<400> 52

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accatgcctg aggggtacaat cgtgtgctgc ctggaggaga agcctggaga ccgtggcaag 120
ctggcccggg catcaggga ctatgccacc gttatctccc acaaccctga gaccaagaag 180
accctgtgtg agctgccctc cggctccaag aagggtatct cctcagccaa cagagctgtg 240
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cgcagagatg cccctgctgg ccgcaaagtg ggtctcattg ctgcccggcc gactggacgt 480
ctccggggaa ccaagactgt gcaggagaaa gagaactagt gctgagggcc tcaataaagt 540
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ggggccaact tacccttnca tgcaaa 626

```

<210> 53

<211> 920



<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc feature  
<222> (617)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (621)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (725)  
<223> n equals a,t,g, or c

<400> 53  
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tggaactcg cagagtcctg gtgggtgagc agcagcagtg ccasgatgcc aagagccagc 180  
agaaggagca gatgttgctg ctggagaaka agagtgtctg ttactcccag gtgcttctcc 240  
gctgcctcac tttgctgcag aggcttcttc aagaacaccg gctgaagact caatccgagc 300  
tagaccgcat caatgcccag tacctggaag tcaagtgcg tgctatgatc cttaagctga 360  
ggatggagga gctaaagatt ttgtccgaca cttacactgt tgagaaagtg gaagttcatc 420  
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agtacaccgt actcaagcag gcaacagaga acaagcgggtg ggccctccag gagttcagca 600  
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ctaactcttc tgctagtggg accaccttca cctggggctg ccttcagtac aaggagtggt 720  
ggaaatstt acgcttgaaa cactgcagtc atttaggcac tctcctggtt tctctttatt 780  
ttttatgact gggcctcttc tggaaaatct agcaaggaga tttatataat ttttatgcat 840  
agctgtgtgt cagtgtcagc cctgtattgt atttgattat ctcctgaata aagttatgat 900  
attawaaaaa aaaaaaaaaa 920

<210> 54  
<211> 1090  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1024)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1034)  
<223> n equals a,t,g, or c

&lt;400&gt; 54

```

gagtaaccca gaaatgatgt tgcatttttt gctttacctg ataattgaaa ctttcaacaa 60
tctctggagt gactttttct cctcgaattg aaacaagtct atggcaaaag aagctgcatt 120
tttttcacaa aaggggaagat ggtaacaatg gtcacttcaa acttttgggc taaattatat 180
gtacacagaa atgttcaaaa tcatagtttt aatgtgtttt gaaaaggcca cacaattata 240
ctttatcttt tcttaataat cctgcaaatc tctgccctgg aatccgaaat ctgaaaatgt 300
actggcctga acaaaatttg ttttgtgtgt tagagttata aatcattaat ctttatttcg 360
gggtggtttac gtttatgcca gttcctttat atttaaatct cttgttttat atattttgaa 420
tgtctttata gatttcttta aatttcctta tagaaccatt aatagaaaat cattacattt 480
aaaatatacc ttacagcaaa agcatccaaa taagtatagg gtttatgtcc ttatttttct 540
ttcagctgaa tacgaatgaa cacagtgtgt gaatttctga aggggaagtga tgaaattata 600
tttatttcag tgggcacttt tccattttac cactgtacca ttatttggtt cctggagtta 660
tacactaatt ttcagtatat tactgttaaa ttaccaacac aaggcaattt atttgaaaga 720
ttccgtttat cctgccattg ctttgaaaag cagcaggaaa cgaaatcctt tgacttgtat 780
cagcttctgc agagcatctt tgttttcctt tgtcctttgt ttcctacctt ttgaatcaga 840
ttccgtttta gtcaggaaga cttcttgagg ccattcttag taacctgaaa tttctttttt 900
aattgcatga agtgattga tcatgagcaa atgatgtgt tatttctccc tcaactgtga 960
atatctttga acttgctgtt ttcaatatgg gcagcacaaa ggtgagagat acatattaat 1020
agtngtatgt attnctctta tacattagat acctatattt aatgaaagg gccaatattg 1080
aaacatatac                                     1090

```

&lt;210&gt; 55

&lt;211&gt; 1464

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (766)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 55

```

ccgctccgga attcccgggt cgacccacgc gtccgccac gcgtcgccca cgcgtccggg 60
gacgctctca gctctcggcg cacggcccag cttccttcaa aatgtctact gttcacgaaa 120
tctgtgcaa gctcagcttg gagggatgat actctacacc cccaagtga tatgggtctg 180
tcaaagccta tactaacttt gatgctgagc gggatgcttt gaacattgaa acagccatca 240
agaccaaagg tgtggatgag gtcaccattg tcaacatttt gaccaaccgc agcaatgcac 300
agagacagga tattgccttc gcctaccaga gaaggaccaa aaaggaactt gcatcagcac 360
tgaagtcagc cttatctggc cacctggaga cggtgatttt gggcctattg aagacacctg 420
ctcagtatga cgcttctgag ctaaaagctt ccatgaaggg gctgggaacc gacgaggact 480
ctctcattga gatcatctgc tccagaacca accaggagct gcaggaaatt aacagagtct 540
acaaggaaat gtacaagact gatctggaga aggacattat ttcggacaca tctggtgact 600
tccgaagct gatggttgcc ctggcaaagg gtagaagagc agaggatggc tctgtcattg 660
attatgaact gattgaccaa gatgctcggg atctctatga cgctggagtg aagaggaaaag 720
gaactgatgt tcccaagtgg atcagcatca tgaccgagcg gagtgncccc acctccagaa 780
agtatttgat aggtacaaga gttacagccc ttatgacatg ttggaaagca tcaggaaaga 840
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cctgtatttt gctgacggc tgtatgactc catgaagggc aaggggacgc gagataaggt 960
cctgatcaga atcatggtct ccgcagtgga agtggacatg ttgaaaatta ggtctgaatt 1020
caagagaaaag tacggcaagt ccctgtacta ttatatccag caagacacta agggcgacta 1080
ccagaaagcg ctgctgtacc tgtgtggtgg agatgactga agcccgacac ggctgagcg 1140

```

```

tccagaaatg gtgctcacca tgcttccagc taacaggtct agaaaaccag cttgcgaata 1200
acagtccccg tggccatccc tgtgaggggtg acgttagcat tcccccaac ctcatttttag 1260
ttgcctaagc attgcctggc cttcctgtct agtctctcct gtaagccaaa gaaatgaaca 1320
ttccaaggag ttggaagtga agtctatgat gtgaaacact ttgcctcctg tgtactgtgt 1380
cataaacaga tgaataaact gaatttgtac tttaraaaaa aaaaaaaaaa aactyrgggg 1440
ggggcccgka cccattggcc ttag                                     1464

```

<210> 56

<211> 985

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (647)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (875)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (962)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (973)

<223> n equals a,t,g, or c

<400> 56

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agaagttgct agtgttcaat gcagctgggg tgaaacccca ggggcaaggt ggctggcttt 60
gatctggacg ggaacgtcat caccacacgc tctgggaagg tctttccac tggccccagt 120
gactggagga tcttgtagcc agagattccc cgtaagctcc gagagctgga agccgagggc 180
tacaagctgg tgatcttcac caaccagatg agcatcgggc gcgggaagct gccagccgag 240
gagttcaagg ccaagggtga ggctgtggtg gagaagctgg gggccccctt ccaggtgctg 300
gtggccacgc acgcaggctt gtaccggaag ccggtgacgc gcatgtggga ccatctgcag 360
gagcaggcca acgacggcac gcccatatcc atcggggaca gcatctttgt gggagacgca 420
gccggacgcc cggccaactg ggccccgggg cggaagaaga aagacttctc ctgcgccgat 480
cgctgtttg ccctcaacct tggcctgccc ttcgccacgc ctgaggagtt ctttctcaag 540
tggccagcag ccggcttcga gctcccagcc tttgatccga ggactgtctc ccgctcaggg 600
cctctctgcc tccccagatc cagggccctc ctgagcgcca cccggangtg gttgtcgcag 660
tgggattccc tggggccggg aagtcacact ttctcaagaa gcacctcgtg tcggccggat 720
atgtccacgt gaacaggac acgctaggct cctggcagcg ctgtgtgacc acgtgtgara 780
cagccctgaa cgaagggaaa cgggtcgcca tcgacaacac aaaccagac gccgcgagcc 840
gcgccaggta gctccartgt gcccgagccg cggngtacc cctgccctg cttcctcttc 900
accgccactc tggagcaggc gcgccacaac aaccgggtga gcccgcttca gcccgggaca 960
cnccccgggg atngcacccc ctgga                                     985

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<210> 57  
<211> 1246  
<212> DNA  
<213> Homo sapiens

<400> 57  
ctcagagtcg cgaggccgga cgcagcgcgc gccgcccac tcgccccagc cgccgccatg 60  
aaggccgtgg tgcagcgcgt caccggggcc agcgtcacag ttggaggaga gcagattagt 120  
gccattggaa ggggcatatg tgtgttgctg ggtatttccc ttggaggatac gcagaaggaa 180  
ctggaacaca tgggtccgaa gattctaaac ctgcgtgtat ttgaggatga gagtgggaag 240  
cactggtcga agagtgtgat ggacaaacag tacgagattc tgtgtgtcag ccagtttacc 300  
ctccagtgtg tcctgaaggg aaacaagcct gatttccacc tagcaatgcc cacggagcag 360  
gcagagggct tctacaacag cttcctggag cagctgcgta aaacatacag gccggagctt 420  
atcaaagatg gcaagtttgg ggcctacatg caggtgcaca ttcagaatga tgggcctgtg 480  
accatagagc tgggaatcgcc agctcccgcc actgctacct ctgacccaaa gcagctgtca 540  
aagctcgaaa aacagcagca gaggaagaa aagaccagag ctaagggacc ttctgaattc 600  
aagcaaggaa agaaacactc cccgaaaaga agaccgcagt gccagcagcg gggctgaggg 660  
cgacgtgtcc tctgaacggg agccgtagct caggaggcag aattcagtgt gttatcattg 720  
ggcagaactg gatcctgaaa aattcaagat gctaagcacc tacactactt taagaatttg 780  
gaactgaaac atgaagagga agacagaaat aagaatttgg gaacctgaat agctctgcaa 840  
aaaacaccaa aggaccgttt tatcgttttc tgtgttgct gtggtggagt gatgcagtgg 900  
gcactkccsg tgggcccagg ggcgggtgcg catgtggtag aagggtgtcg ctcgtgcctc 960  
ccccacagaa aggctttgtt ggtttctacc acatcttggc ttgcttttgg aacaggctgg 1020  
ccccagcatc atttgtcatc aagtccactg tgggtgtattc tgcgtgtcca tggcgggggt 1080  
tctccaayac actcacactg tccatgttct ttttattgcc agggcccgtg ttgaagtgtc 1140  
aagagagcaa tcatcaatga taatgtattg tgtgagacct ttgcatcttg taaattttct 1200  
cttttttcta aaaataaata ataataaaat cctaaatctc aacaaa 1246

<210> 58  
<211> 1966  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1926)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1942)  
<223> n equals a,t,g, or c

<400> 58  
gggagaaaga tccttcactc acagaaccag ttattagggg gttaatgaaa ttttggccta 60  
aaacatgtag tcaaaaagag gtcattgtcc ttggggactg gaagaaatat tggatgtgat 120  
tgaaccttca caatttgtaa aaatccaaga acctttgttt aaacaaatcg ccaagtgtgt 180  
atctagcccc cattttcagg tggcagaaag agcactctat tattggaata atgaatacat 240  
catgagtttg atagargaaa actctaactg catccttccc atcatgtttt ccagccttta 300  
taggatttca aaagaacatt ggaatccggc tattgtggcg ttggtgtaca atgtgttgaa 360  
ggcatttatg gaaatgaaca gcaccatgtt tgacgagctg acagccacat acaagtcaga 420

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tcgtcagcgt gagaaaaaga aagaaaagga gcgtgaagaa ttgtggaaaa aattggagga 480
tctggagtta aagagaggtc ttagacgtga tggaataatt ccaacttaac aaaaacaatg 540
acaacaacat tactaacctg tggagtcaca cgtttatgta gtagaagatg gagcaacagt 600
tttctgtatt gtgcaacttt acagtagatt tcacctttgt ttcatatta cagcagcact 660
gtatatacct gtctctaagt aaaggaaaaa acaaaataag gacttcaatc caaagtttg 720
acagtagatg gacttctcag aactttgcaa acataatcat tgttctcacc ctcttttaaa 780
aaaaaaaaatc ggtcttcaaa gatctgttga tgaaattgct atgttaaaat tccattatcg 840
ggagtctcct atttatcact agcagagagt atgatacaat tttcaaatgt gaacaatcct 900
aaatttagct tgtctttctg ctaagctgtt aaatgtatct atagtaaagg aagaaaaaaa 960
gactgtcatt tccttataag tttgtgtaac atcctcctct ggataacttg actgtaattt 1020
racatctttt tcttttgac atcttcctga gttgaatgtc cacgtggaat ggggtcatga 1080
attataaaaag tccctgataa aagttttgtt tactggggtg aacatctttc cagtaaccag 1140
gtagtcctgg tactccttta gttttaaaat taggagttaa gagagaagag gtgataaaca 1200
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tgcatatatc attgaacaca cataccagag atgttttaga aatgtgagaa aaacatcctt 1380
ttggaccatt tgaaataaga aagacaaaca ctaaaacaata caaccatgaa attgatcacc 1440
gggattgcaa atctaattgg gaaaagagtt gagcaaacag cttggactgt ttggagtgtt 1500
tgcttactt tttaatatgt atttataaag tattccagca aaagaggatg tagcctctgg 1560
gaaaaaacia acatgttaca gtgttttttg tagattctcg ttctatatct catcacagcg 1620
ccagccctgt ttttagccgg aaaggattca ggataaacat tattatgcat tctgaattgg 1680
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aaatctggaa attcctaatt tcctgagtat taataataaa gtttaaaaat gcttttatat 1800
caaaagtgca tcgtgaccaa attgtttaa aaaaaaaac aaaaaaaca aaatctaggg 1860
ctgtatttta tatatatata tatatatata tatatatata tatatatata 1920
cttatnggac tctctgcttt gntattttaa taaaaaatct tacatc 1966

```

<210> 59

<211> 1611

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<400> 59

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cgcgtcngtg cgaattcggc acgaggggac ttcccagagc tcacaatgga ggttgatggt 60
aaggtagagt caattatgaa gaggacagct ttggtagcca atacctcaa tatgcctgtt 120
gctgctagag aagccyctat ttatactgga atcacactgt cagagtactt ccgtgacatg 180
ggctatcatg tcagtatgat ggctgactct acctctagat gggctgaggc cttagagaaa 240
tctctggctg tttagctgaa atgcctgcag atagtggata tccagcctat cttggtgccc 300
gtctggcctc gttttatgaa cgagcaggca gggtgaaatg tcttgaaaat cctgaaagag 360
aagggagtgt cagcattgta ggagcagttt ctccacctgg tggatgattt tctgatccag 420
ttacatctgc cactcttggt atcgttcagg tggtctgggg cttagataag aaactagctc 480
aacgtaagca tttccctctt gtcaattggc tcatcagta cagcaagtat atgcgtgcct 540
tggtgaata ctatgacaaa cacttcacag agttcgttcc tctgaggacg aaagctaagg 600
aaattctgca ggaagaagaa gacctggcag aaattgtaca gcttgaggga aaggcttctt 660
tggcagaaac agataaaatc actctggagg tagcaaaaact tatcaaagat gatttcctac 720
aacaaaatgg atatactcct tatgacaggt tctgcccatt ctacaagaca gtagggatgc 780

```

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tgtccaacat gattgcattt tatgatatgg ctgtagagt gtttgaaacc actgcccaga 840
gtgacaataa aatcacatgg tccattattc gtgagcacat gggagacatc ctctataaac 900
tttcctccat gaaattcaag gatccactga aagatggtga ggcaaagatc aaaagcgact 960
atgcacaact tcttgaagac atgcagaatg cattccgtag ccttgaagat tagaagcctt 1020
gaagattaca actgtgattt ccttttcctc agcaagctcc tatgtgtata ttttcctgaa 1080
tttctcatct caaacccttt gcttctttat tgtgcagctt tgagactagt gcctatgtgt 1140
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gtgtgtgtaa gggcctccct cttcctttat ctgaagtggg gaatatagta aatatacatt 1260
ctggttacac tactgtaaac ttgtatgtag ggtgatgacc ctctttgtcc taggtgtacc 1320
ctttcctcat ctctattaaa ttgtaaacag gactactgca tgtactctct ttgcagtga 1380
tttggaatgg aaggccaggt ttctataact tttgaacagg tactttgtga aatgactcaa 1440
tttctattgt ggtaagctca ttggcagctt agcattttgc aaaggaattg ctttgcagga 1500
aatatttaat tttcaaaaac ataatgatta atgttccaat tatgcatcac ttccccagk 1560
ataaaycagg aatgkttgtg agaaaccatt ggaactata ctctttttta a 1611

```

<210> 60

<211> 1849

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (100)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (977)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1846)

<223> n equals a,t,g, or c

<400> 60

```

gattcccggg tcgacccacg cgtccgcgcg gaatctcagt tagcgggtgga gaggcagtat 60
gtccgggttca atggcgactg cggaagctag cggcagcgan tgggaaaggg caggaagtcg 120
agacctcagt cacctattac cggttggagg aggtggcaaa gcgcaactcc ttgaaggaaac 180
tgtggcttgt gatccatggg cgagtctacg atgtcacccg cttcctcaac gagcaccctg 240
gaggagaaga ggttctgctg gaacaagctg gtgtagatgc aagtgaagc tttgaagatg 300
taggacactc ttctgatgcc agagaaatgc taaagcagta ctacattggt gatatccatc 360
cgagtgcact taaacctgaa agtggtagca aggacccttc aaaaaatgat acatgcaaaa 420
gttgctgggc atattggatt ttacccatca taggcgctgt tctcttaggt ttctgtacc 480
gctactacac atcgaaaagc aaatcctcct gagggagcct tgctgaagtt agaaagtgca 540
tccacttttg ggcgaaaact agagacttgc ttgggggctg cagaagtgcc ctctcctcga 600
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ccgtgttgaa caattgccgg tgttctctct cttcactggt ttccatgagt acccttatat 780
ttcacaactt tctgttcata agttatagtg acattgctct ttggtaaaaa tgctgtctt 840
ccaatacttt gattgcatat tagacattct taacagggcg gcagtcagtg gttgaaagtt 900

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```

ttatttttcc atttttcttt taagtaaatt ttttttaaaa aattctgatt tagggctagg 960
tgtggtggct caggccngta atcckggcac ttkgggrggc caaggtggga agatcgsttg 1020
aggccaagag ttcaagacca gcctgggcaa catagcgaga cccctatctg tattaaaaaa 1080
aaatctgatt taattctttt atttatcata aggggtttta ttcctgaagt aaaggtttgc 1140
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ccctgagccc agccccttcc caagtgtgct cggacaaaaa actacatggc ctttctgtgt 1320
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aagtgagagt tcatgacaac agaccgtttt ccatttcac tgtattttat ctccgtgact 1740
ccaactgtg ggtttgttct gtttttccat gagaataaaa tactggcggg ttttttcaaa 1800
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaggngnga 1849

```

<210> 61

<211> 233

<212> DNA

<213> Homo sapiens

<400> 61

```

aagggtcggc ctctcaaagt gctgggatta caggcattag ccactgtgcc tggccaagaa 60
taaaaatttt ttaatcttga gaaraaacat acagkctata catataaaaa gccttgaaaa 120
tattattccc ttgactcac taattacact gctggaatat aaagaaatga tcctaaatat 180
atatgtagtt ttatggtcct aaatatgtat aaagctttat gatcactcgt gcc 233

```

<210> 62

<211> 2333

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (14)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2327)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2331)

<223> n equals a,t,g, or c

<400> 62

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ttagccatat attttgaggt tgtcaatcag cataatgctc caattcytca aggagggcgt 120
ggtgcaatcc agtttgtagc tcagtatcag cattcaagtg ggcagagacg catccgagt 180
accaccattg ctaggaactg ggcagatgct caaactcaaa tccaaaacat tgctgcatct 240
tttgaccagg aggagctgct cattcttatg gcccggttag caatatatag agcagaaaaca 300
gaagaaggtc cagatgtgct taggtggctg gacagacagc tcattcgact gtgtcagaaa 360
tttgagagaat atcataaaga tgacccaagt tccttcagat ttccagaaac tttctccctt 420
tatccacagt ttatgtttca tttaagaaga tcttctttcc tgcaagtttt taacaatagt 480
cctgatgaga gttcatatta tcgtcaccat tttatgcgtc aagatctgac ccagtctcta 540
attatgattc agcctatcct gtatgcgtat tcttttagtg gaccaccaga gccggttctt 600
cttgatagca gtagcattct tgcagatcgt attcttctca tggacacatt cttccagatt 660
ttgatttata atggtgagac catagcacag tggcggaagt caggatacca ggatatgcct 720
gagtatgaaa atttccgcca ccttctgcaa gccccagtg atgatgcaca ggaaattctt 780
cactccagat ttccaatgcc aagatacatt gacactgaac atggaggcag ccaggcccgt 840
ttcctccttt caaaagtcaa cccttcacag actcataata atatgtatgc ctgggggcag 900
gagtcctggag cacctattct tacagatgat gttagtttac aagtgtttat ggatcacttg 960
aagaaaactg ctgtgtccag tgctgcttga agtgctaata atgttaaaga cacttaagaa 1020
gatgaaataa tattcaaatt tcattttttc ctttttccat ttatctgttg aaaccaacag 1080
atatgtctct atattttttg tattagtatg gtttgagaca acatatggaa aatgttcaca 1140
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cagtgttata gctggttcta gaaatttgaa gtctttataa cttaattatg tttaataaaa 1260
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<211> 1470

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1410)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1414)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1419)

<223> n equals a,t,g, or c

<400> 63

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<210> 64

<211> 939

<212> DNA  
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 <222> (11)  
 <223> n equals a,t,g, or c

<400> 64  
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 <211> 2068  
 <212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc feature  
 <222> (308)  
 <223> n equals a,t,g, or c

<400> 65  
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<210> 66

<211> 1391

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (16)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
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<222> (1343)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1358)  
<223> n equals a,t,g, or c

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<210> 67  
<211> 659  
<212> DNA  
<213> Homo sapiens

<220>  
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 <222> (139)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (475)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (585)  
 <223> n equals a,t,g, or c

<400> 67  
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<210> 68  
 <211> 2981  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (2858)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (2948)  
 <223> n equals a,t,g, or c

<400> 68  
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&lt;210&gt; 69

&lt;211&gt; 603

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

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<220>  
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 <223> n equals a,t,g, or c

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<210> 70  
 <211> 1101  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <223> n equals a,t,g, or c

<220>  
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 <222> (1080)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (1081)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (1090)  
 <223> n equals a,t,g, or c

&lt;400&gt; 70

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nctcggtcgn caagggaatt c 1101

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&lt;210&gt; 71

&lt;211&gt; 714

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 71

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tgctgccatt tttattggtg tttgattatt ggaatgggtc catattgtca ctcttctac 660
ttgctthaaa aagcagagtt agattthtgc acattaaaaa attcagtatt aatt 714

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&lt;210&gt; 72

&lt;211&gt; 2890

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (555)

&lt;223&gt; n equals a,t,g, or c



<220>  
 <221> misc feature  
 <222> (2853)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (2882)  
 <223> n equals a,t,g, or c

<400> 72  
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<210> 73

<211> 2488

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (277)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (446)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2382)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2412)

<223> n equals a,t,g, or c

<400> 73

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&lt;210&gt; 74

&lt;211&gt; 711

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (696)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 74

```

ggcacgagcc ggagtggctg gtgggtggga tggaggcgac cttggagcag cacttggaag 60
acactatcta tgtaaaattc aaaactggaa aagtataaag ggtacagaga gacacctgcc 120
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ttgaagcagc aggtccaggt cactttgtat atagaatttt gctgtattca ataaatctgt 660
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<210> 75  
<211> 906  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (4)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (362)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (889)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (894)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (897)  
<223> n equals a,t,g, or c

<400> 75  
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tgccctctg agcctcagtc ttctgccagt gacgcaggga gacggcactg actgcctccc 180  
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<210> 76

<211> 271

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

<400> 76

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aaaacaaaac cctctgtatc attatgtgaa caacgggtgca aaaaagagga gacacagttt 180  
acccatgggt agctaactat gatagtgaat gttgccttga acctgttttt agaaaaatgg 240  
caagtgtggg tctcactctt ctagtctctg a 271

<210> 77

<211> 673

<212> DNA

<213> Homo sapiens

<400> 77

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accctacgg agaacgagct gaagtccac tacatggtgc acacatctct ggacgtggtg 180  
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<210> 78

<211> 367

<212> DNA

<213> Homo sapiens

<400> 78

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tagcttctaa actgatacct cagtagccca tagtttaaa gagtaagag tacatggatg 180  
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367

<210> 79

<211> 1344

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1319)

<223> n equals a,t,g, or c

<400> 79

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<210> 80

<211> 3748

<212> DNA

<213> Homo sapiens

<400> 80

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aatttggcta gcggccatt gggataagaa gctaaccaaa gccatgtgt tcgagtgtaa 360
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<210> 81

<211> 1891

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1869)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1879)

<223> n equals a,t,g, or c

<400> 81

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<210> 82

<211> 1954

<212> DNA

<213> Homo sapiens

<400> 82

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<210> 83

<211> 936

<212> DNA

<213> Homo sapiens

<220>

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<222> (895)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (930)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (936)

<223> n equals a,t,g, or c

<400> 83

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<210> 84

<211> 1513

<212> DNA

<213> Homo sapiens

<400> 84

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<210> 85

<211> 1298

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<400> 85

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<210> 86

<211> 2009

<212> DNA

<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1959)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2008)  
<223> n equals a,t,g, or c

<400> 86  
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<210> 87  
<211> 534  
<212> DNA  
<213> Homo sapiens

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<220>  
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<222> (477)  
<223> n equals a,t,g, or c

<220>  
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<222> (526)  
<223> n equals a,t,g, or c

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<210> 88  
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<212> DNA  
<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>  
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<220>  
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<223> n equals a,t,g, or c

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&lt;221&gt; misc feature

&lt;222&gt; (4296)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 88

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<210> 89

<211> 2782

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (82)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (743)

<223> n equals a,t,g, or c

<400> 89

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2782

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&lt;210&gt; 90

&lt;211&gt; 1037

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 90

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aatgaaatta tatagattag atctcagtat ttaaactgtt cctcaatttt gtgaggctgt 180
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<210> 91

<211> 1052

<212> DNA

<213> Homo sapiens

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<221> misc feature

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (962)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (965)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1044)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1048)

<223> n equals a,t,g, or c

<400> 91

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gatgttctct ctccacagct gaaagatgaa aattctaagc tgagaagaaa gctgaatgag 180
gttcaragct tctytraagc wcawacagaa atgggtgagga cgcttgagcg gaagttagaa 240
gcaaaaatga atcaaggagg aaagcgacta ccacgacctg gagtcggtgg ttcagcaggt 300

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<210> 92

<211> 1234

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1115)

<223> n equals a,t,g, or c

<400> 92

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<210> 93

<211> 1571

<212> DNA

<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<400> 93  
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ggaagatccc aaacaccaa gatggaagggt gaaaataaag actgcgtgac cgggaagaaa 1440

gtttgaatta ctaatagtgg ggaataataa tttcagtttt ggtttttaaac atctggnatt 1500  
cctaaaaaaa aaaaaaanaaaa aaaaaaaacn cgggggggggg cccggnaccc aattcccccc 1560  
aaagggggggg n 1571

<210> 94

<211> 1872

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (51)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1271)

<223> n equals a,t,g, or c

<400> 94

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gacctattca tgcattctca ccagcagctg gacatctcc acccttggtg tttctgggtg 180  
aaattacttg agctctgtgc tttgaaacca gtttgataag tcctttacta aggagctcct 240  
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accgcagcct cgtcaagatg tcggacaaaa aggaagcgct gctcagaaac gkgcccaaaa 480  
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gccggccccc cctcacttct aatgagaagc ttatgtctggc ctccatgttc cactcgtctc 1260

```

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cagatcctag gcaagctgga atagattctc ttctccgaaa gatttatgag atttactcag 1440
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aatgttgtaa taaatattcc tttgatcttg gtgtttgcaa aaaaaaaaaa aaaaaaaact 1860
cgagactagc gg                                     1872

```

&lt;210&gt; 95

&lt;211&gt; 1516

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1505)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 95

```

ggagggcaga aaggagagt gctgggcggg cttagtcgga gattgaggac tgggaatccg 60
cttcggggag ggcactgtct agtgacacagg caacctggcc tsgcctcct agcccgagaa 120
gccgaatctc cctaattccct gtgacctgtg tcacctctgc atcgcgagga gggggataag 180
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aaggcgcccc caccccaact ccacgggaat ataacaatt tgtattttcc gatcagggtg 300
cgggacaggc ttcattggga cagccctaac ccagctgctg aatgccagag gccacgaagt 360
acgttgggtc cccgaaagcc cgggcccggc cggatcacgt gggatgagct cgctgcatcg 420
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cgaagatgga atgaaacctt ccaaaaagag gttctcggca gccgcctaga gaccacccaa 540
ttgctggcta aagccatcac caaagcccca caaccccca aggcctgggt cttagtcaca 600
ggtgtagctt actaccagcc cagtctgact gcggagtatg atgaagacag cccaggaggg 660
gactttgact ttttctccaa cctcgttaacc aaatgggaag ctgcagccag gcttcctgga 720
gattctacac gccagggtgg ggtgcgctca ggggttgtgc tgggcccgtg ggtggtgcc 780
atgggccaca tgctgctgcc ctttcgcctg ggccctgggg gccccatcgg ctcaggccac 840
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gcaaaccacg tgcacggggg cctgaatgga gtggctccat cctccgccac taatgctgag 960
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ttggtttctc tacatgtcct gcagctgccc cacttctcct ttacgtgtg tagagaatgc 1440
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gggncccg acccat                                     1516

```

&lt;210&gt; 96

<211> 1770  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc feature  
<222> (485)  
<223> n equals a,t,g, or c

<400> 96  
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gtcggacatt gaagcgggtac ccatgccggc agwgtgaaca gtccttccac accccaaca 120  
gcctgcgcaa acacatccgc aacaacatg acacagtaaa gaagttctac acctgcgggt 180  
actgcacaga ggacagcccc agctttcctc ggccctccct tctggagagc cacatcagcc 240  
ttatgcatgg catcagaaac cctgatttga gccagacgtc caaagtgaaa cctccgggtg 300  
gacattcccc tcaggtgaac catctgaaaa gaccagtcag tggagtgggg gacgctccag 360  
gcaccagcaa tggcgcaact gtctcttcca ccaaaaggca caagtccctt tttcagtgcg 420  
cgaaatgtag ttttgccaca gactcggggc tcgagtttca gagccacata cctcagcacc 480  
aggtnngaca gytccacagc ccaatgtctc ctctgtggtt tgtgtacac ctctgccagc 540  
tccctcagcc gccacctctt cattgtccac aaggtgagag accaggagga ggaggaggaa 600  
gaggaggcgg cggcacggag atggcagtgg aggtggcaga gcagaggagg gctccgggga 660  
rgargtgccc atggagacta gagagaatgg actggaagaa tgtgccggtg agccyttgtc 720  
agctgacca gaggcgagga gattgctggg cccggccctt gaggacgatg gtggccacaa 780  
tgatcacakt caaccacagg cytytcagga ccaggacagc cacacactgt cccctcaggt 840  
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cctgcggacc gtggaaaata aaaggctctg ccccagtggt gagtgtgacc gggtgtaccc 960  
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cccactgctg tcaactaggc ttgaacccca cagcggtgtg gctcttcttg gaggttcccg 1200  
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gagcaggagg taaggcaaag gcaggcaggc accaagaacc agacccttg agaaggcgct 1560  
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acattggaat atttgtactg ctctcgtgcc atttgagagg cttgctgccc caggcaggcc 1680  
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<210> 97  
<211> 938  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc feature  
<222> (183)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (293)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (360)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (938)  
<223> n equals a,t,g, or c

<400> 97  
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gccaggccta ggagaagaca ggtgcagctc ttgcagctct gcgggtgtgc ggccaaaggc 180  
aangcccacg ggctggatgt cacttccccg actgtctctt ggttggcttg tccttgtgca 240  
agaccacgcs tgtcacgaca garcctgggc acttcagagg aggagccagg ttngaattgt 300  
aaggggggaa ttgggggtcca ccatagtctt ctgctctggt cctccacggg tgggaccagn 360  
atggaagtct cctgcctaac ctactgcat tgcactggac ctgggatgcc tatccacct 420  
ctggcagaag acactcacca gggtatctgt gaagagactc tgggatccca tcacctcaa 480  
gccagagggt ccccaagtca ccgctgagag cacttgagcc tcaaggatgt aagcctgacc 540  
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tccactcttc ttcgaggca actgagaaca cataaagcaa gcagctacct agcatcccc 660  
tcctaaagct ttagactcag agcccagggt cccccacaag cctcaaggta gcctcagggt 720  
tctctaattt cctccactec cagttcgaag caaacagctt actgcctagt ccccgccaat 780  
cccaagggcg ggctggctga tggcagcatg gtgggctggc ctgggtgtgg agtgaaagag 840  
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ttcctattaa aggaccttct gaagggcaaa aaaaaaan 938

<210> 98  
<211> 311  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (297)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (309)  
<223> n equals a,t,g, or c

<400> 98  
agatgcggct ggagcagcag aagcagacgg tccagatgcg cgcgcagatg cccgccttcc 60  
ccctgcccta cgcccaggca tgtgccatcc tcccgccacc cagaggtttg tgggctgagg 120

```

accgaactctc accgctgtct ctttcgtccc cagctccagg ccatgcccgc agccggaggt 180
gtgctctacc agccctcggg accagccagy ttccccagca ccttcagccc ygccggctcg 240
gtggagggct ccccaatgca cggcgtgtac atgagccagc cggtcctctg cgctggncct 300
taccacagna t 311

```

```

<210> 99
<211> 620
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (368)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (570)
<223> n equals a,t,g, or c

```

```

<400> 99
actgccggtc gttcggacgt cttgcctgtc gctggaggag aggtccgggc tctccaggaa 60
ggtggctgcg gcgacaaaat gaagatatc gtgggcaacg tcgacggggc ggatacgact 120
ccggaggagc tggcagccct ctttgcgccc tacggcacgg tcatgagctg cgccgtcatg 180
aaacagttcg cttcgtgca catgcgcgag aacgcgggag cgctgcgcgc catcgaagcc 240
ctgcacggcc acgagctgcg gccgggggag gcgctcgtgg tggagatgtc gcgcccagg 300
cctcttaata cttggaagat ttctgtggc aatgtgtcgg ctgcatgcac gagccaggaa 360
ctgcgcanc tttcagagcg cgcgacgcg tcatcgagtg tgacgtgggt aaagactacg 420
cgtttgttca matggagaag gaagcagatg ccaaagccgc aatcgcgag ttcaacggca 480
aagaagtga gggcaagcgc atcaacgtgg aatctycacc aagggtcaga agaaggggccc 540
tggcctggct gtccagtcct gggacaagan caagaaacca agggctgggg ataggccttc 600
cctggaatgg tggctttctg 620

```

```

<210> 100
<211> 2511
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (12)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (28)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (44)

```



<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2456)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2488)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2511)

<223> n equals a,t,g, or c

<400> 100

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gccagattcg gccgagcaag cggaacctct gggaaaagca atctgtggat aaggtcactt 120
ccccactaa ggtttgagac agttccagaa agaaccacaag ctcaagacgc aggacgagct 180
cagttgtaga gggctaattc gctctgtttt gtatttatgt tgatttacta aattgggttc 240
attatctttt atttttcaat atcccagtaa acccatgtat attatcacta tatttaataa 300
tcacagtcta gagatgttca tggtaaaagt actgcctttg cacaggagcc tgtttctaaa 360
gaaacccatg ctgtgaaata gagacttttc tactgatcat cataactctg tatctgagca 420
gtgatacca ccacatctga agtcaacaga agatccaagt taaaattgc ctgcggaatg 480
tgtgcagtat ctagaaaaat gaaccgtagt ttttgttttt taaatacag aagtcattgt 540
gtttctgcac ttataataa agcatggaag aaattatctt agtaggcaat tgtaacactt 600
tttgaagta acccatttca gatttgaaat actgcaataa tggttgtctt taacaaaaaa 660
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tgtgaatttt attaatgcta tcactctgac caagctcaaa gcctacttat tagaaacaat 1200
gaagttcaca ataggtcata aggtctcttc cttttctaaa attgaaagac aagaaattta 1260
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gaatcttcta gctttagcaa acctaagcca aaggaaggaa agccacgaag aatgcagaag 1920
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```

```

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cactattaca tatttttcta gaaaatctaa agttcagaag agaattgtatc actgctgact 2160
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catccacaat aaatggaatt ccttcctgca aaaaaaaaaa aaaaaagggc ggccgntcta 2460
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```

<210> 101

<211> 2981

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (293)

<223> n equals a,t,g, or c

<400> 101

```

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ccctcggtta ccctttcctg cccactagc gtggccgcga gcctcggtga gccggccgta 120
ttcccgtctt cgcttagggg gcacaggcgc aggcacgcgc ccggccactc caagccttcg 180
gtgcccgggc gcgtctggga tacgggcccg ggagggcccg ccctccgtcc gcccggtgcc 240
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agtgcctgca gcaggagacc acctgccccg tgtgcctgca gtacttcgca gagcccatga 420
tgctcgactg cgcccataac atctgttgcg cgtgcctcgc ccgctgctgg ggcacggcag 480
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gcgtgctgcc gctcagaggag gcggtggagg gcttcaagga gcaaattccag aaccagctcg 780
accatttaaa aagagtgaag gatttaagga agagacgtcg ggcccagggg gaacaggcac 840
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ccctgcggac cccgctccag cgggtgggga tttctcttga ctatgatgct ggtgaggtct 1680
ccttctacaa cgtgacagag aggtgtcaca ccttactttt ctctcatgct accttttgtg 1740
ggcctgtccg gccctacttc agtctgagtt actcgggagg gaaaagtgca gctcctctga 1800

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tcattctgccc catgagtggg atagatgggt tttctggcca tgttggaat catggtcatt 1860
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gatgttttaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa g 2981

```

&lt;210&gt; 102

&lt;211&gt; 2804

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 102

```

ccaaggacac aggtgaaagg ttgagccatg cagtaggctg tgcttttgca gcctggttta 60
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&lt;210&gt; 103

&lt;211&gt; 722

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 103

```

cgggaagagg cggacagcga ggccaagatt tcagctgcgg gacggtcagg ggagacctcc 60
aggcgagggg aaggacggcc aggggtgacac ggaagcatgc gacggctgct gatccctctg 120
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accgctgcgg gtggtaacca gtggaagacc ccagcccca gggagaggaa cccgttctat 660
ccccagccat gataataaag ctgctctccc agctgcctct caaaaaaaaaa aaaaaaaaaa 720
aa 722

```

&lt;210&gt; 104

&lt;211&gt; 1636

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 104

```

tacggctgcg agaagacgac agaagggggg ctatctgaag aggacgggga cgggagcctg 60

```

```

ctctacagcg tggtaaacac ggccgagcga cgctgatgag gaggagaccc acccggtgac 120
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cgttttctaa ctggraaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1620
aaaaaggggg gggggg 1636

```

&lt;210&gt; 105

&lt;211&gt; 1561

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 105

```

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ggagaaacct cccaaaaaga aggccagga caaaattctt agtaatgagt atgaggagaa 120
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tccccttaaa aaagcaaagg agtctaaaaa gcatgaaaag cttgagaaac cagagaagga 240
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t
1561

```

&lt;210&gt; 106

&lt;211&gt; 486

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 106

```

tcgaccacag cgtccgccca cgcgtccgga aagcagtgtc aagacagtaa ggattcaaac 60
catttgccaa aaatgagtct aagtgcattt actctcttcc tggcattgat tgggtgtacc 120
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cagattgacc atattgatga aaaggccttt gagaatgtaa ctgatctgca gtggctcatt 360
ctagatcaca accttctaga aaactccaag ataaaaggga gagttttctc taaattgaaa 420
caactgaaga agctgcatat aaaccacaac aacctgacag agtctgtggg cccacttccc 480
aaatct
486

```

&lt;210&gt; 107

&lt;211&gt; 800

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 107

```

cttgtatctg atcgtttctaa aaaagagttg tccccggttt taaccagtga agttcatagt 60
gttcgtgcag gacggcatct tgctaccaa ttgaatattt tagtacagca acattttgac 120
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tcyctggaca gaggaagatg tggttwaaac ggtccaaaaa acatwtcca acttggttg 780
ataaggggaa ggaaaaaagg
800

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&lt;210&gt; 108

&lt;211&gt; 1058

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (895)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1019)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1054)

<223> n equals a,t,g, or c

<400> 108

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<210> 109

<211> 1076

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (780)

<223> n equals a,t,g, or c

<400> 109

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aggatgcag gtctgtctgc tatcagctat gccgctgccc gttgcgctgc agacccgctt 180
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ggccaagaga ggcacacctca aacatctgga gcctgaacca gaggaagaga tcattgccga 240
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```

<210> 110

<211> 1199

<212> DNA

<213> Homo sapiens

<400> 110

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<210> 111

<211> 3630

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3606)



<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (3608)

<223> n equals a,t,g, or c

<400> 111

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<210> 112

<211> 1526

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1496)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1511)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1512)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1515)

<223> n equals a,t,g, or c

<400> 112

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tcttgaggct atcagatcgg tatggcattg gcgtccgggc ccgcaaggcg ggcgctagct 120
ggctccgggc agctcggcct tgggggcttc ggggccccga gacgcggggc gtatgagtgg 180
ggcgtgcgct ccacgcgga gtcggagcct cctcccctgg atagggtgta cgagatccct 240
ggactggagc ccatcacctt tgcggggaag atgcacttcg tgccctggct ggcgcggccg 300
atctttccgc cctgggaccg cggctacaag gacccaaggt tctaccgctc gccccctctt 360

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cacgagcadc cgctgtacaa agaccaggcc tgctatatct ttcaccaccg ttgccgcctt 420
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gagaaagtgc ttagccttgt tgatgatcca aggaaccaca tagagaacca agacgagtgc 540
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&lt;210&gt; 113

&lt;211&gt; 585

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (422)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 113

```

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tggtgttggg attaggagat ctgcacatcc cacaccgggt caacagtttg ccagctaaat 120
tcaaaaaact cctggtgccca ggaataatc agcacattct ctgcacagga aacctttgca 180
ccaaagagag ttatgactat ctcaagactc tggctggtga tgttcattat gtgagaggag 240
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ttggtctgat ccatggacat caagttattc catggggaga tatggccagc ttagccctgt 360
tgagagggca atttgatgtg gacattctta tctygggaca cacacacaaa tttgaagcat 420
tngagcatga aaataaatc tacattaatc caggttctgc cactggggca tataatgcct 480
tgaaacaaa cattattyca tcattgtgtt gatggatatc caggcttcta cagtggkcac 540
ctatgtgtaa tcagctaatt ggagatgaag tgaaagtaga acgga 585

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&lt;210&gt; 114

&lt;211&gt; 501

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 114

```

gatgaaaaga aggtttttgc tcttcaaatg cttaagtaaa ctaaaaggca gagctggaaa 60
taaagcccgt attgtggact ccaagtaatg ctctttctgc tacaccatac tttgtgggtg 120

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ctgctcccat gtgcttcttc gctaaggctg atcaaaaaag ttagtaggtt gcttcagcta 180
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tgggatgtct gcttactcct gttgagtaaa tgtgatctat tcacccttgg ragctccttg 300
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ccttgttttg acagagtggg tgtaaaagtga ggttatgtct tggcctgagc gtcttcaaag 480
catgtgccac tttgtgcac t 501

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<210> 115

<211> 1965

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (338)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (343)

<223> n equals a,t,g, or c

<400> 115

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gagtgcagtg gtggctgccg ccgcaccagc ctcagtggca gatgacacac cccccccga 180
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gttgatggcg ccgtgtagaa gccgctctgt atccatccac gcgtgcagag ctgccagcag 1560
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cagcttcctg ctgatgaaca tgctgtttgt attgttttag gaaaccaggc tgttttgtga 1920
ataaaacgaa tgcattgttg tgtcacgaar maaaaaaaaa aaaaaa 1965

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<210> 116

<211> 1060

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (299)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1060)

<223> n equals a,t,g, or c

<400> 116

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ggatggcata gttcttgagg cagatacaag agcaactgaa gggatgggtg ttgctgacaa 240
gaactgttca aaaatacact tcatatctcc taatatattat tgttgtggtg ctgggacanc 300
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1060

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<210> 117

<211> 709

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (174)

<223> n equals a,t,g, or c

&lt;400&gt; 117

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gttaaatctt  gctgaattcg  tggtaagctg  ttaccatgtc  tacattttgt  agantgattt  180
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ttagacaga  ggccctgtgg  tgaaagtgtc  aatattaagt  ttmcccttag  aagatcccyt  300
cctcaaacct  cagaaccctt  agcagtgtta  ccctwaaaca  aaaatgagct  cgagaaaaaa  360
gtagctcagt  tacagagaag  caaatcgagt  tatttcccca  cataaaaaag  ttccccagat  420
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ttgataactt  taataaagg  catttaagga  cataagtttt  taaagactcc  caaagtgaag  540
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ataaatatgt  cttattttta  aaaaaaaaaa  aaaaaactcg  agactagct  709

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&lt;210&gt; 118

&lt;211&gt; 2053

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (813)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2049)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 118

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gccacattgg  agatggcgg  actgagcaga  catgccccca  cgagtgcctt  gactccctgg  180
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taatatttcc ggcaaaatcc catgcttggg tttgtcttt aacctgttaa cgcttgcaat 1980
cccaataaag cattaataag catraaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 2040
ggggggggnc cgg                                     2053

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&lt;210&gt; 119

&lt;211&gt; 1824

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 119

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tagaaaatga aaagtgttaa aatagcattt gctgttactc tggagacagt gtagccgggt 180
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gctgagtggt tacactttgc aagctgtggt gaagatcaca ctgtgaagat acacagagtc 1800  
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<210> 120

<211> 606

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (144)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (155)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (598)

<223> n equals a,t,g, or c

<400> 120

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 ctatttycag cttttcctca attnacattt tggtngtata ctccagagtg atgttatcta 180  
 agtttaagta gtttaagtat gttaaatgtg gatcttttac accacatcac agtgaacaca 240  
 ctggggagat gtgctttttt ggaaaactca aagggtgctag ctccctgatt caaagaaata 300  
 tttctcatgt ttgttcattc tagtttata tttcatttaa aatcctttag gtttaagtta 360  
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 aggccttgac ttaaaacttt ctttgtactg tgatttcctt ttgggtgtat tttgctaagt 480  
 gaaacttggt aaattttttg ttaactaaat tttttctta aaataaagac tttttcacia 540  
 wraaaaaaaa aaaaaaaaaa actcgagggg gggcccgtag ccaatcgctt gtgatgtntc 600  
 gtatac 606

<210> 121

<211> 838

<212> DNA

<213> Homo sapiens

<400> 121

gaatcccggg tcgaccacag cgtccgggaa agatcggcgc gcaccgcagg agcaacgggtt 60  
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 gccaccatct tgctgggtggg cacggaggat gctcttctgc agcagctggc ggactcgatg 180  
 ctcaaagagg actgcgcctc cgagctgaag gtccacttgg caaagtccct ccctttgccc 240  
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ccagtgtctg agcagggaga gctgggcaga agcagcgagg gggcccagct ggcgagactg 720  
tagccccctc ccaactccac actcactctt gcagagcctg tgtctttaag cagctggcgt 780  
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<210> 122

<211> 656

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (41)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (218)

<223> n equals a,t,g, or c

<400> 122

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gcgtcctggc cgcagcggcg cgctgcctgg tccgggggtgc ggaccgaatg agcaagtggg 180  
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gcttcctcac ctccggctgg aggttcgtgc agatcaaggc gatgggtccc gagttcgtcg 300  
tcccggatct gaccggcttc aagctcaagc cctacgtgag ctacctcgcc cctgagagcg 360  
aggagacgcc cctgacggcc gcgcagctct tcagcgaagc cgtggcgccg gccatcgaaa 420  
aggacttcaa ggacggtacc ttcgaccctg acaacctgga aaagtacggc ttcgagccca 480  
cacaggaggc aaagctcttc cagctctacc ccaggaaact cctgcgctag ctgggcgggg 540  
gaggggagcg ctgccctcat ctcatctcta ttaaacgcct ttgccagcta aaaaaaaaaa 600  
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaggggggg ggccggacgc gtgggc 656

<210> 123

<211> 1386

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (8)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1283)

<223> n equals a,t,g, or c

<400> 123

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cattgg
1386

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<210> 124

<211> 845

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (823)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (825)

<223> n equals a,t,g, or c

<400> 124

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catcgtgggt gagtactgtg aacctgcggg cttcgaggcg acctacctgg agctggccag 180
tgctgtgaag gagcagtatc cgggcacga gatcgagtcg gcgctcgggg gcacaggtgc 240
ctttgagata gagataaatg gacagctggt gttctccaag ctggagaatg ggggctttcc 300
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gatcaccaac agccgtcctc cctgcgtcat cctgtgactg cacaggactc tgggttcctg 420
ctctgttctg ggggtccaaac cttggtctcc ctttggctct gctgggagct cccctgcct 480
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aaagaaggaa tagaagattc cgtggccttg ggggcaggag agagacactc tccatgaaca 600
cttctccagc cacctcatat ccccttccca gggtaagtgc ccacgaaagc ccagtccact 660

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cttcgcctcg gtaataacctg tctgatgcc aagatTTTT ttattctccc ctaaccacagg 720
gcaatgtcag ctattggcag taaagtggcg ctacaaacac taaaaaaaa aaaaaaaaa 780
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa atntnggggg ggggcccccc 840
cccccc 845
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&lt;210&gt; 125

&lt;211&gt; 1656

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 125

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tgctgcagct ggaggagctc ccccgctgctg agggggctgc tgttgagga ggccctggga 180
gcagtgcggg gccccacact cccartgcgg aggctgctga gccagaggcc agactggcgg 240
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ctctgcgat ggcatTTgtg tttttgatat ttgtgtctgt tactactttt ttaatacaaa 1620
aagataaaaa cgcccaaaaa aaaaaaaaaa aaacc 1656
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&lt;210&gt; 126

&lt;211&gt; 837

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 126

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tggacgttgg ccctgtttgc tttttataaa ccaaactcta tctgaaatcc caacaaaaaa 60
aatttaactc catatgtgtt cctcttgttc taatcttgtc aaccagtgc aagtaccgac 120
aaaattccag ttatttatTT ccaaaatggt tggaaacagt ataattgac aaagaaaaat 180
gatacttctc tttttttgct gttccaccaa atacaattca aatgcttttt gttttatttt 240
tttaccatt ccaatttcaa aatgtctcaa tgggtctata ataaataaac ttcaacactc 300
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tttatgataa caacactgtg ttatattctt tgaatcctag cccatctgca gagcaatgac 360
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gccctcccta ttttaactac ctcaactggt cagaaacaca gattgtattc tatgagtccc 480
agaagatgaa aaaaatttta tacgttgata aaacttataa atttcattga ttaatctcct 540
ggaagattgg tttaaaaaga aaagtgtaat gcaagaattt aaagaaatat ttttaaagcc 600
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gtactttcac ttttaactc tagatcagaa ttgttgactt gcattcagaa cataaatgca 780
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<210> 127

<211> 1217

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1168)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1169)

<223> n equals a,t,g, or c

<400> 127

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ttccgcagtt cgaagcccag ttggggccgac caggtggagg aggaggggga ggacgacaaa 180
tgtgtcacca gcgagctcct caaggggatc cctctggcca caggtgacac cagcccagag 240
ccagagctac tgccgggagc tccactgccg cctcccaagg aggtcatcaa cggaaacata 300
aagacagtga cagagtacaa gatagatgag gatggcaaga agttcaagat tgtccgcacc 360
ttcaggattg agaccgggaa ggcttcaaag gctgtcgcaa ggaggaaagaa ctggaagaag 420
ttcgggaact cagagtttga ccccccgga cccaatgttg ccaccaccac tgtcagtgc 480
gatgtctcta tgacgttcat caccagcaaa gaggacctga actgccagga ggaggaggac 540
cctatgaaca aactcaaggg ccagaagatc gtgtcctgcc gcattctgca gggcgaccac 600
tggaaccacc gctgccccta caaggatacg ctggggccca tgcagaagga gctggccgag 660
cagctgggac tgtctactgg cgagaaggag aagctgccgg gagagctaga gccggtgcag 720
gccacgcaga acaagacagg gaagtatgtg ccgccgagcc tgcgcgacgg ggccagccgc 780
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cactgtgtac tcggtccggg acccttggcg acagaagaca gcctccgaga gcgcgggctc 1140
caagggcaat aaagcagctc cactctcna aaaaaaaaaa aaaaaaaaaa ggcgcccgct 1200
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1217

<210> 128

<211> 1349

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1133)

<223> n equals a,t,g, or c

<400> 128

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gccgcgaact gcatcatgga ggtgtcctgt ggccaggcgg aaagcagtga gaagcccaac 120
gctgaggaca tgacatccaa agattactac tttagactcct acgcacactt tggcatccac 180
gaggagatgc tgaaggacga ggtgcgcacc ctcaactacc gcaactccat gtttcataac 240
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<210> 129

<211> 2318

<212> DNA

<213> Homo sapiens

<400> 129

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gcacggctcc gggtagccat ggaggacccc acgctctata ttgtcgagcg gccgcttccc 180
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aagctgggca aggcgcacgc accacgagca atacggtgag caagctgctg gagaagggtgc 480

```

```

gcaaggtcag cgtcaacgtg aagaccgtgc gcggcagcct ggagcgccag gcggggcaga 540
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tctaccagga tgaagtgaag ctgccggcca aactgagcat cagcaaactc ctgaaagagt 660
cggaggcgct gccagagaag gagggcgagg agctgggcga gggcgagcgg cccaggagga 720
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<210> 130

<211> 2149

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (787)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (819)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1518)

<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2116)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2147)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 130

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&lt;210&gt; 131

&lt;211&gt; 1020

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (11)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1019)

<223> n equals a,t,g, or c

<400> 131

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<210> 132

<211> 2319

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2246)

<223> n equals a,t,g, or c

<400> 132

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ttgggaccgg cggctgatgc aggatgacaa ccggggccta ggccaagggc tcaaggacaa 180
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gaacgccccg gcgctcgctc tgctgtagc caggatgcag ctcccaggcc ctgggtctcg 360
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<210> 133

<211> 1373

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (403)

<223> n equals a,t,g, or c

<400> 133

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ctccagccat gctctccgcc ctgccccggc ctgccagcgc tgctctccgc cgcagcttca 180

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ttttattttt caaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 1373

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&lt;210&gt; 134

&lt;211&gt; 1657

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 134

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gtaaaacaga ccatcagtaa catttcagga tttaatgaaa cctgcttgag atggagaagc 180
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ttgaaaaaga gaacagtgc gtaggcaaat gtttcaagca ctttagaaac agtacttttc 1440

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tgctgtgtct gttaggcagc attgctttga tgcaatttct attgtcctat atattcaaaa 1560
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa ggcggccc 1657

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<210> 135

<211> 2360

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1517)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2330)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2353)

<223> n equals a,t,g, or c

<400> 135

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gagacagtat tacacactgc tgaaccaggc cccagacatg ctgcatagat tttatggaaa 240
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&lt;210&gt; 136

&lt;211&gt; 1042

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 136

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agttattgaa tatcaagagg aggagttggt ggacaagggt tatagctcgg tgctgcggca 480
gtgtctacagc atgtacaagc tttttaatgg tacatttctg aaagccatgg aagacggagg 540
cgtcaagctt ctgaaagaaa gattagagaa attcttccat cggattttgc aaacgctaca 600
tttgagtcga tgtgacctac ttgacatttt tgggtggaatc agcttcttcc cgttgataaa 660
aatgacttat ttgaaaatcc agtcctttat taatagaatg gaggaagcc tgaatatagt 720
caaatacact gcttttctct ataacgatca gctcatctgg agtggattag aacaagatga 780
catgagaatt ttatacaaat accttaccac ctccctttty ccaaggcaca tcgaacctga 840
gttagcagga agggattctc caataagagc agaaatgccg ggaaatcttc aacactatgg 900
aagatttctt accggaccct tgaacctcaa tgatccagat gcaaaatgca gattcccaaa 960
aatttttgta aatacagwtg acacttatga agagctccat ttaatcgktt ataaggyctg 1020
agaaagaacc ccagtttaag tt 1042

```

&lt;210&gt; 137

&lt;211&gt; 1037

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 137

```

ggcaccggga gcggcggtt ggtctacgct gtgcgcggcg gacgtcggag gcagcgggga 60
gcggagcggg gccgcgggg cctctccagg gccgcagcgg cagcagttgg gcccccgcc 120
ccggccggcg gaccgaagaa cgcaggaagg gggccggggg gacccgcccc cgcccgccg 180
cagccatgaa ctccaacgtg gagaacctac cccgcacat catccgctg gtgtacaagg 240

```

```

aggtagacgac actgaccgca gacccacccg atggcatcaa ggtctttccc aacgaggagg 300
acctcaccga cctccaggtc accatcgagg gccctgaggg gaccccatat gctggagggtc 360
tggtccgcat gaaactcctg ctggggaagg acttcctgc ctccccaccc aagggtact 420
tcctgaccaa gatctccac ccgaacgtgg gcgccaatgg cgagatctgc gtcaacgtgc 480
tcaagaggga ctggacggct gagctgggca tccgacacgt actgctgacc atcaagtgcc 540
tgctgatcca ccctaacccc gagtctgcac tcaacgagga ggcgggcccg ctgctcttg 600
agaactacga ggagtatgcr gctcggggcc gtctgctcac agagatccac gggggcggcg 660
gcggggcccag cggcagggcc gaagccggtc gggccctggc cagtggcact gaagcttcct 720
ccaccgaccc tggggcccca gggggcccgg gaggggctga ggggtccatg gccaagaagc 780
atgctggcga gcgcgataag aagctggcgg ccaagaaaaa gacggacaag aagcgggccc 840
tgcgggcggct gtagtgggct ctcttcctcc ttccaccgtg accccaacct ctctgtccc 900
ctccctccaa ctctgtctct aagttattta aattatggct ggggtcgggg agggtagagg 960
gggcactggg acctggattt gtttttctaa ataaagttag aaaagcaaaa aaaaaaaaaa 1020
aaaaaaaaaa aaaaaaaa                                     1037

```

<210> 138

<211> 1490

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1225)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1239)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1348)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1452)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1487)

<223> n equals a,t,g, or c

<400> 138

```

cggcacgagg tggattcttg tccatagtgc atctgcttta agaattaacg aaagcagtgt 60
caagacagta aggattcaaa ccatttgcca aaaatgagtc taagtgcatt tactctctc 120
ctggcattga ttggtggtac cagtggccag tactatgatt atgattttcc cctatcaatt 180
tatgggcaat catcaccaaa ctgtgcacca gaatgtaact gccctgaaag ctaccaagt 240
gccatgtact gtgatgagct gaaattgaaa agtgtaccaa tgggtgcctcc tggaatcaag 300

```

```
tatctttacc ttaggaataa ccagattgac catattgatg aaaaggcctt tgagaatgta 360
actgatctgc agtggtcat tctagatcac aaccttctag aaaactccaa gataaaaggg 420
agagttttct ctaaattgaa acaactgaag aagctgcata taaaccacaa caacctgaca 480
gagtctgtgg gccacttcc caaatctctg gaggatctgc agcttactca taacaagatc 540
acaaagctgg gctcttttga aggattggta aacctgacct tcatccatct ccagcacaat 600
cggctgaaag aggatgctgt ttcagctgct tttaaaggct ttaaatact cgaatacctt 660
gacttgagct tcaatcagat agccagactg ccttctggct tccctgtctc tcttctaact 720
ctctacttag acaacaataa gatcagcaac atccctgatg agtatttcaa gcgttttaat 780
gcattgcagt atctgcgttt atctcacac gaactggctg atagtggaa acctggaaat 840
tcttcaatg tgcacccct gggtgagctg gatctgtcct ataacaagct taaaaacata 900
ccaactgtca atgaaaacct tgaaaactat tacctggagg tcaatcaact tgagaagttt 960
gacataaaga gcttctgcaa gacctgggg ccattatcct actccaagat caagcatttg 1020
cgtttggatg gcaatcgcat ctcaraaacc agtcttccac cggatatgta tgaatgtcta 1080
cgtgktgcta acgaagtcac tcttaattaa tatctgtatc ctggaacaat attttatggk 1140
tatgkttttc tgtgkgtcag ttttcatagt atccatawtt tawtactgk tattacttcc 1200
atgaatttta aaatctgagg gaaangttg taaacattna tttttttaa gaaaagagaa 1260
aggcaggcct attcatcaca agaacacaca catatwcacg aatagacatc aaactcatgc 1320
tttatttgta aatttagtgt ttttttantt ctacgtcaaa gatgtgcaa accttttacg 1380
gttgaggaa acagccagtt ttaaaatcct taaacttaag ttctcaagc tggataaaac 1440
ataggagtac cnctgcacaa tatctgaaca tcaatgtcgg taaaatnggg 1490
```

<210> 139

<211> 1684

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (93)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (201)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1657)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1659)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1682)

<223> n equals a,t,g, or c

&lt;400&gt; 139

```
tcgacccacg cgtccggccg gctgagccac agcagggtcg ccgcggggtc ccggggccgt 60
gctcccctgc ccctccggga gcgcgcgggg cgnngcgggg cggggcgggg ccaggcgggc 120
gagctggggc ctgcgccctc cctcggggcg tcacctgggc acgggcgctg cagggtgtcg 180
ggcctcaacc ttgcggaccg nacagccatc gatcctcggg tggcctcgag gtggtggcag 240
ggccgcccc tgacgtccgg agacgaacgc acggaccggg cctccggagc argttcggyt 300
ggaargaamc gctctcgstt cgtcctacac ttgcgcaa atgtccgagc ttactcacat 360
agcatattgg tatatcaaaa tgaaatgcaa ggaacaaaa ataacataat tgaaggcagt 420
aaaagtga aa ttaaatagga agatcatcag tcaaggaaaga cccactggag aggacagaaa 480
atgaagcagt gttttatcat gtgtatttca gcagggtctt ttgaaattta actaaaaata 540
tgactgctct ctcttcagag aactgctctt ttcagtacca gttacgtcaa acaaaccagc 600
ccctagatgt taactatctg ctattcttga tcatacttgg gaaaatatta ttaaatatcc 660
ttactactag aatgagaaga aaaaacacct gtcaaaattt tatggaatat ttttgcattt 720
cactagcatt cgttgatctt ttacttttgg taaacatttc cattatattg tatttcaggg 780
attttgta ct ttaagcatt aggttacta aataccacat ctgcctattt actcaaatta 840
tttcctttac ttatggcttt ttgcattatc cagtttctt gacagcttgt atagattatt 900
gcctgaattt ctctaaaaca accaagcttt catttaagtg tcaaaaatta ttttatttct 960
ttacagtaat ttaatttgg atttcagtcc ttgcttatgt ttggggagac ccagccatct 1020
accaaagcct gaaggcacag aatgcttatt ctgcgtactg tcctttctat gtcagcatte 1080
agagttactg gctgtcattt ttcattgtga tgattttatt tgtagctttc ataacctgtt 1140
gggaagaagt tactactttg gtacaggcta tcaggataac ttcctatatg aatgaaacta 1200
tcttatattt tcctttttca tcccactcca gttatactgt gagatctaaa aaaatattct 1260
tatccaagct cattgtctgt tttctcagta cctggttacc atttgtaacta cttcaggtaa 1320
tcattgtttt acttaaagtt cagattccag catatattga gatgaatatt ccctgggtat 1380
actttgtcaa tagttttctc attgctacag tgtattggtt taattgtcac aagcttaatt 1440
taaaagacat tggattacct ttggatccat ttgtcaactg gaagtgtgc ttcattccac 1500
ttacaattcc taatcttgag caaattgaaa agcctatatc aataatgatt tgktaatt 1560
attaattaaa agttacagct gtcataagat cataatttta tgaacagaaa gaactcagga 1620
catattaaaa aataaactgr actaaaacaa aaaaaancna aaaaaaaaaa aaaaggcg 1680
cnac 1684
```

&lt;210&gt; 140

&lt;211&gt; 427

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (395)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (417)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 140

```
ggacttcctc ccagcacatt cctgcactct gccgtgtcca cactgcccc cagacccagt 60
ctccaagcc tgctgccagc tccctgcaag ccctcaggt tgggccttgc cacggtgcc 120
gcaggcagcc ctgggctggg ggtaggggac tccctacagg cacgcagccc tgagacctca 180
gagggccacc ccttgagggg ggccaggccc ccagtggcca acctgagtgc tgctctgcc 240
```

```

accagccctg ctggccctg gttccgctgg cccccagat gcctggctga gacacgccat 300
ggcccttcag ctggccca ca cytyttcccg gscctggaa kttggcaytg cagcagacag 360
ytccytgggc accagrcagy taacaggaca cagcngccag cccaaacagc agcgggnatg 420
ggggcag                                     427

```

```

<210> 141
<211> 889
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (60)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (698)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (889)
<223> n equals a,t,g, or c

```

```

<400> 141
ggcacgaggt tgacgtcctg tagcatttgc tgttctagaa agtacagaga cacgtagaan 60
agatgggagg atctagaagg aggctgtctc ctgtgtagtg tatatttatc tgtaagttag 120
ccgttgggga aggattgaat acagagacgc tgtctgcttg ctgccttaag acagctagct 180
gaattgctga ttaactttta aaatacccag cttggtttat ttttcttaga atctgttgct 240
aagactgggg acgctgtttt cttttacaaa gggaaatcta agttaatttc aaggcattcg 300
aaatggggaa agactattat tgcatttttg gaattgagaa aggagcttca gatgaagata 360
ttaaaaaggc ttaccgaaaa caagccctca aatttcatcc ggacaagaac aaatctcctc 420
aggcagagga aaaattttaa gaggtcgagc aagcttatga agtattgagt gatcctaaaa 480
agagagaaat atatgrtcag tttggggagg aagggttgaa aggaggagca ggaggtactg 540
atggacaagg aggtaccttc cggtacacct ttcattggcg tcctcatgct acatttgctg 600
catttttcgg agggccaac ccctttgaaa ttttcttttg aagacgaatg ggtggtggta 660
gagattctga agaaatggaa atagrtggtg atccttttag tgccttttgt ttcagcatga 720
atggatatcc aagagacagg aattctgtgg ggccatccc cctcaaaca gatcctccag 780
ttattcatga acttagagta tcactgaag agatatatag tggttgtacc aaacgggatg 840
aaagatttct cgaaaaagg taaaacgctg atggtaggag ttacagtn 889

```

```

<210> 142
<211> 1505
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (1493)
<223> n equals a,t,g, or c

```



&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1499)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1500)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 142

```

agtgagggaa gcgatgggag cgggaatggc cggccacagg gtcgcaggag acgggacgcc 60
agcttttggc tccgttcgcg tggtctcttc gtcagtactg acacctcggg cttgtagagc 120
actttcacga gcaaaagcgc cccccgtcta tatcatatcg cctctcggtc ctcctaaaaa 180
tcgtatgaga tggagctgga ggaggggaag gcaggcagcg gactccgcca atattatctg 240
tccaagattg aagaactcca gctgattgtg aatgataaga gccaaaacct ccggaggctg 300
caggcacaga ggaacgaact aaatgctaaa gttcgcctat tgcgggagga gctacagctg 360
ctgcaggagc agggctccta tgtgggggaa gtagtccggg ccatggataa gaagaaagt 420
ttggtcaagg tacatcctga aggtaaattt gttgtagacg tggacaaaaa cattgacatc 480
aatgatgtga caccgaattg ccgggtggct ctaaggaatg acagctacac tctgcacaag 540
atcctgcccc acaaggtaga cccattagtg tctactgatg tggaggagaa agtaccagat 600
tcaacttatg agatgattgg tggactggac aaacagatca aggagatcaa agaagtgatc 660
gagctgcctg ttaagcatcc tgagctcttc gaagcactgg gcattgctca gcccaaggga 720
gtgctgctgt atggacctcc aggcactggg aagacactgt tggcccgggc tgtggctcat 780
catacggact gtacctttat tcgtgtctct ggctctgaat tggtagagaa attcataggg 840
gaaggggcaa gaatggtgag ggagctgttt gtcattggcag ggaacatgc tccatctatc 900
atcttcatgg acgaaatcga ctccatcggc tcctcgcggc tggagggggg ttctggaggg 960
gacagtgaag tgcagcgcac gatgctggag ttgctcaacc agctygacgg ctttgaggcc 1020
accaagaaca tcaaggttat catggctact aataggattg atatcctgga ctcggcactg 1080
cttcgcccag ggcgcattga cagaaaaatt gaattccac ccccaatga ggaggcccgg 1140
ctggacattt tgaagattca ttctcggaag atgaacctga cccgggggat caacctgaga 1200
aaaattgctg agctcatgcc aggagcatca ggggctgaag tgaaggcgt gtgcacagaa 1260
gctggcatgt atgccctgcg agaacggcga gtccatgtca ctcaggagga ctttgagatg 1320
gcagtagcca aggtcatgca gaaggacagt gagaaaaaca tgtccatcaa gaaattatgg 1380
aagtgagtgg acagcctttg tgtgtatctc tccaataaag ctctgtgggc caagtcaaaa 1440
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aangggggnn 1500
cccccc                                           1505

```

&lt;210&gt; 143

&lt;211&gt; 1235

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 143

```

cggacgggtg gtagcggcgg cggcgtggc accccggccc cggcggggcc cggcggacgg 60
cgggcaaagg tcccaggaa gtagcgtcag catctgcagc gcgctcgacg ttgtcggagc 120
ctccgcggag gaccaggag agccggacta ggaccagggc cctgggcctc cccacactcc 180
ccatggagaa gctggcgggc tctacagagc cccaaggggc tcggccgggt ctgggcccgt 240
agagtgtcca ggtgcccgat gaccaagact ttcgcagctt ccggtcagag tgtgaggctg 300
aggtgggctg gaacctgacc tatagcaggg ctggggtgtc tgtctgggtg caggctgtgg 360

```

```

agatggatcg gacgctgcac aagatcaagt gccggatgga gtgctgtgat gtgccagccg 420
agacactcta cgacgtccta cacgacattg agtaccgcaa gaaatgggac agcaacgtca 480
ttgagacttt tgacatcgcc cgcttgacag tcaacgctga cgtgggctat tactcctgga 540
ggtgtcccaa gcccctgaag aaccgtgatg tcatcaccct ccgctcctgg ctccccatgg 600
gcgctgatta catcattatg aactactcag tcaaacatcc caaataccca cctcggaaaag 660
acttggtccg agctgtgtcc atccagacgg gctacctcat ccagagcaca gggcccaaga 720
gctgcgtcat cacctacctg gccaggtgg accccaaagg ctccctaccc aagtgggtgg 780
tgaataaatc ttctcagttc ctggctccca aggccatgaa gaagatgtac aaggcgtgcc 840
tcaagtaccc cgagtggaaa cagaagcacc tgccctcactt caagccgtgg ctgcacccgg 900
agcagagccc gttgccgagc ctggcgctgt cggagctgtc ggtgcagcat gcggactcac 960
tggaagaacat cgacgagagc gcggtggccg agagcagaga ggagcggatg ggcggcgccg 1020
gcggcgaggg cagcgacgac gacacctcgc tcacctgagc gycgcaccgc ttcagggacg 1080
gagacaggac cgggcgagcc ctggggcggc gcccgctcct gcactttctc ccctccccca 1140
cccggcacct ggtggcaccg ggccaggccc aggcgggtgc tgcagcctgg ctggacagag 1200
ccccaataaa cgatcccaca gcctcaaaaa aaaaa 1235

```

<210> 144

<211> 1420

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1385)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1396)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1400)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1410)

<223> n equals a,t,g, or c

<400> 144

```

gcaagaacgg agctgactga ggaaccaact ggagggtctt cactctctcc ttccccagtg 60
tacaaaacca gttttctgca acattcagga gccaaatgag gaaaaagaat caagaatctg 120
actcacagcc catctgatct gttcaaagct gtcttttcca cctgctgaaa ttcattaaat 180
cactggaggc atgcataatg aatggagaat gagtgaactt ccaatgcaac ttggattcac 240
aaacccatta tcatagccaa tatgcagatt ttaaacagca tttcacattt catttgacca 300
tgtcttcttt ctgcacgcgc ctgctgcaga attccctact agaattgtgaa acaacgaaca 360
aaccacagaa cttcagagtgt gctggttagt cacataactt agtagcagga ttgtgtatcc 420
aggcacaaaag gtgtctttgc taatgttctc ttgctacctg ccctgcttca aacgctaaat 480
ggtatgggtc tttctttgtt gccagccata ttctacaaat aagacttttc aatatagtta 540

```

```

tgagtaatat aattttatgt acatataatg ttagaatatt gtacagaatc ttggtttcta 600
cgatgcgctt ttcttgtttc aaaaagagga aaatgcttga tttttgttga tgatactttt 660
gttactgtcc ttaattttcc atagtttggt ttcttaattg tgctactaa gcatcgatct 720
gtgctgatgc caagctatgg actatgtacg caagaccgag caatagacag aggtgcctag 780
gggtccaaaca cactgaacgc acgtggaccg cctggwtcag gagcctcatc agacccttct 840
ccatgcacat ccttcccaa cagtcacaga ttccattgaa aggagcagat tctatcagtt 900
cttctgtgca gactttaaga gctgaacggt ctgggttctgg aagccatgtg actgcgcaga 960
acaacctaaag aaaccctttg tgcctgagg gggtcgttgac ctctccttcc gggtcggagc 1020
agtcactctg agggcaaaagc gtggtccact gtgtgtgatg ttttcaggat gctaggggtca 1080
aagaaagaaa ccaagtggta cataagccca gcttttctgc tgggctaagt gtaagtgtga 1140
gtaacatggt caagcccctc ttttttgggc tatgtaaaagc ctttcctgcc ttgcattaat 1200
gctatctccc tgtgtactgt ttctcttaaa tggagcagat agaaatctgc agtggtggca 1260
gatagggtgga tgggagaggg atggataatt ttatcttctg ggccacagag ctggcagccc 1320
cagtttgtcc agagtccttt aaatggaaac ccccaaattc atcccttcct ttccctaacc 1380
cccangggga tattcntagn attaaagggcn cgggataagt 1420

```

<210> 145

<211> 1919

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1882)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1898)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1919)

<223> n equals a,t,g, or c

<400> 145

```

gcccacgcgt ccggccgcgc gtccgcccgg cttgaggccc gcggggagcg cggcgcaatt 60
cgtcggcccg cgggggggag gcctcccggc atcttcgcgg cgaccaagga ctaccaggaa 120
ggggagcggc tgggatggcg cgtccgggcc ccgskagtac aaagcgggag acctggtctt 180
cgccaagatg aagggtacc cgcactggcc ggcccggatt gatgaactcc cagaggcgct 240
gtgaagcctt cagcaacaa gtatcctatc ttcttttttg gcacccatga aactgcattt 300
ctaggtccca aagacctttt tccatataag gagtacaaag acaagtttg gaaagtcaaac 360
aaacggaaaag gatttaacga aggattgtgg gaaatagaaa ataaccagg agtaaagttt 420
actggctacc aggcaattca gcaacagagc tcttcagaaa ctgaggggaga aggtggaaat 480
actgcagatg caagcagtga ggaagaaggt gatagagtag aagaagatgg aaaaggcaaa 540
agaaagaatg aaaaagcagg ctcaaaacgg aaaaagtcac atacttcaaa gaaatcctct 600
aaacagtccc ggaaatctcc aggagatgaa gatgacaaag actgcaaaag agaggaaaac 660
aaaagcagct ctgaggggtg agatgcgggc aacgacacaa gaaacacaac ttcagacttg 720
cagaaaacca gtgaagggac ctaactacca taatgaatgc tgcatattaa gagaaaccac 780
aagaaggtta tatgtttggt tgtctaatat tcttgattt gatatgaacc aacacatagt 840

```

```

ccttggtgtc attgacagaa cccagtttg tatgtacatt attcatattc ctctctgttg 900
tgtttcgggg ggaaaagaca ttttagcctt ttttaaaagt tactgattta atttcatggt 960
atgtggtgac atgaagttgc ccttaaccac taaggattat caagattttt gcgcagactt 1020
atacatgtct aggatccttt tatcaaggca gttatgatca tcgttttcct gccttgaccc 1080
caccatcatc aaacactcag ttaaataata attaacattt tttagatgac cactcaacat 1140
aatgcttaag aatggaattt cctctctgtg acagaaccca ggaattaatt cctaaataca 1200
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<210> 146

<211> 1379

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (925)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1371)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1377)

<223> n equals a,t,g, or c

<400> 146

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cgattctggc agaataaaca ggtgttttta gttttccac tgtctgagcc aagcaggacc 180
ctgtcccaga gcaagagatg tcccctcca tctctgaccc ttgcctggga caagctttga 240
tggtggggccc cagcttcaag gctgtggtgg gaacagcacc cccaaatgcc agcctctcct 300
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gggaacagag aggggagaat gccgtccta gcttctgctt ggggatcccc cacacgacct 540
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```

```

aagctgggtc agcgggtctg aagccctcga gtgactttct aacccaagac ccagccccctg 720
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<210> 147

<211> 514

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (406)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (412)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (418)

<223> n equals a,t,g, or c

<400> 147

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tgttctgtaa gccacacagt atgcctgcag aagctgctta tcggagccaa atataattgt 180
cagtacaatt taaagaccac tatgtgtccc cggagaccaa cctgtttatt tccctgaaag 240
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aggagaaaga gattttctta attaagtagc ttatataccc ctagagaagg ccatacaaat 360
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gacgcgtggg cggacgcgtg ggcggacgcg tgggcggacg cgtgggcgga cgcgtgggcg 480
gacgcgtggg cggacgcgtg ggcggacgcg tggg 514

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<210> 148

<211> 2058

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 148

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tctgcgttca gggacctcgt cctttgctgg ctgtggagcg gactgggcag cggccccctg 180
gggccccgtc cctggaactg cccaagccag tcatgcagcc cttgcctgct ggggccttcc 240
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cagaggagga tctgctgtgc atagccaaga ctttctccta ctttcgggaa tctggtggt 360
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aaaaaaaaaa aaaaaaag                                     2058
```

&lt;210&gt; 149

&lt;211&gt; 1781

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 149

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taactcccag ggggttgact ggtggggtaa ctgagcctgc tttgcagtag gtcaccctgc 180
caaacaagct aatatggaaa ccacatgtaa cttagccaga ctataccttg tgtagcttca 240
agaactcgca gtacattacc agctgtgatt ctccactgaa attttttttt taaggagct 300
```

```
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ttataatttt gtgactgagg atcatttggt tgtaaatgta ctgtgccttt aacttttagac 480
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aacaggaatc atcgattcat ccataaataa tataaggaaa aacttatgct gtagcctgca 660
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<210> 150

<211> 1709

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1612)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1660)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1678)

<223> n equals a,t,g, or c

<400> 150

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gttgaggagg tgagttttga caccaatgag cagtcgctgg agcaggtctt ctcaaagtac 180
ggacagatct ctgaagtggg ggttgtgaaa gacagggaga cccagagatc tcggggattt 240
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```

gggtttgtca cctttgagaa cattgacgac gctaaggatg ccatgatggc catgaatggg 300
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tcccgtaggt accgtggttg ctctgccggg ggccggggct tcttccgtgg gggccgagga 420
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1709

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<210> 151

<211> 922

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (906)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (915)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (922)

<223> n equals a,t,g, or c

<400> 151

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tagacaaggc agttgaggag gagggagcgc ttgaggggga ctggcctggc gtgcactccg 120
cacctcgggg acattattgc gcgtggaacg gctgcttttg gaagactatt gccagaaga 180
aaagatgttt ggttttcaca agccaaagat gtaccgaagt atagagggct gctgtatttg 240

```



```
cagagctaag tcctccagtt ctcgattcac tgacagtaaa cgctatgaaa aggacttcca 300
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tgtgaaaaga tggaagaagt tgccagcagg atcaaaaaaa aactggaatc atgtggtaga 420
tgcaagggct ggacccagtc taaagactac attgaaacca aagaaagtga aaactctatc 480
tggaacagg ataaaaagca accagatcag taaactgcag aaggaattta aacgtcataa 540
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gaaagcagct gctgagaagc cagaggagca gggccagagc ctctgcccac ctccactcag 840
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<210> 152

<211> 635

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (13)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (594)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (614)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (616)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (628)

<223> n equals a,t,g, or c

<400> 152

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tttgtccgcg cccaggagct acacaccttc gaggtgaccg gccaggaaac ggtcgccccag 180
atcaaggctc atgtagcctc actggagggc attgccccgg aagatcaaagt cgtgctcctg 240
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ggaaaagtga gaggtcagac tcctaagggtg gccaaacagg agaagaagaa gaagaagaca 420
```

```

ggtcgggcta agcggcggat gcagtacaac cggcgctttg tcaacgttgt gcccaccttt 480
ggcaagaaga agggccccaa tgccaactct taagtctttt gtaattcttg ctttctctaa 540
taaaaaagcc acttagttca aaaaaaaaaa aaaaaamtcg gggggggccc gkancccaat 600
ttscctata gggngncgtt taaattcntt ggcgg                                     635

```

<210> 153

<211> 2328

<212> DNA

<213> Homo sapiens

<400> 153

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gagaaccgg ccgcccgcctc ggccccgcgg aagccccgcc gcgccatgtc ttcgcctccc 180
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ttgtgcagaa acaccacat acaggagaca ccaaagaaga gaaagacaag gatgaccagg 300
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tatgtacttt tagctagatg tggcatgcat ctgtgagctt tagatcatta aatccaaaa 2220
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<210> 154  
<211> 1268  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (80)  
<223> n equals a,t,g, or c

<400> 154  
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<211> 4299  
<212> DNA  
<213> Homo sapiens

<220>  
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&lt;210&gt; 156

&lt;211&gt; 1006

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 156

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&lt;210&gt; 157

&lt;211&gt; 1686

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 157

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1686

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<210> 158

<211> 4147

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (13)

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<220>

<221> misc feature

<222> (292)

<223> n equals a,t,g, or c

<220>

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<222> (4145)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (4146)

<223> n equals a,t,g, or c

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<211> 1242

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<213> Homo sapiens

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<220>

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<400> 159

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cacacaccca ctccgtaacc tctcccctgt acctgtgcc agcctagcac ttgtgatgcc 960
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<210> 160

<211> 2229

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (29)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (43)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (55)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (59)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (128)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (301)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2226)

<223> n equals a,t,g, or c

<400> 160

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gttgccnag gctggtttcg gattcctggg ctcaagtgat cttcccacct aggtttccca 180

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ncaatattat taaaatactc atttggaata gaattccata tgggttaacc agagtactgt 360
tgggatgggt gtggctatct gcacgtagca gatttcctgc ttttattcaa agmcaatatt 420
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<210> 161

<211> 1920

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (43)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (119)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1755)  
<223> n equals a,t,g, or c

<220>  
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<222> (1766)  
<223> n equals a,t,g, or c

<220>  
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<222> (1832)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1841)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1915)  
<223> n equals a,t,g, or c

<400> 161  
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<210> 162

<211> 2619

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2546)

<223> n equals a,t,g, or c

<400> 162

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<210> 163

<211> 1419

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (230)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (624)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (697)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1187)

<223> n equals a,t,g, or c

<400> 163

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<210> 164

<211> 3810

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (189)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2523)

<223> n equals a,t,g, or c

<400> 164

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&lt;210&gt; 165

&lt;211&gt; 817

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 165

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ccactggaga gaacaggctg gcctctgcac tctggatttg tgacaggagt tatccaggcc 120

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<210> 166

<211> 1578

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (16)

<223> n equals a,t,g,, or c

<220>

<221> misc feature

<222> (38)

<223> n equals a,t,g, or c

<400> 166

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aaatcttcgg gggggggg 1578

<210> 167

<211> 1694

<212> DNA

<213> Homo sapiens

<400> 167

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cctcacccaa ctcaaacag gctggatggg tgggtggtaa aaagggaagg atgaggctcc 1620  
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aaaaaaaaact cgag 1694

<210> 168

<211> 1636

<212> DNA

<213> Homo sapiens

<400> 168

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gtggaggaga tcagtctgct gcagccgag gtggaggagt ccgtgctcaa cctgggcaaa 180

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&lt;210&gt; 169

&lt;211&gt; 667

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 169

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ctggagcccc agatcacccc ttcctactac accacttctg acgctgtcat ttccactgag 180
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tacccaa                                     667

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&lt;210&gt; 170

&lt;211&gt; 3598

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (16)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (964)  
<223> n equals a,t,g, or c

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<210> 171

<211> 940

<212> DNA

<213> Homo sapiens

<220>

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<222> (8)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (12)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (919)

<223> n equals a,t,g, or c

<220>

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<220>  
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<211> 1458  
<212> DNA  
<213> Homo sapiens

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ccatattgtt ttactgtca tagtgtgtct tcttgctg tctgcttag ttttactgt 960  
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caaatacaact atggcatttt tatttgaata tgatgagtat attttgcttc ggaaataata 1140
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<210> 173

<211> 2709

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2595)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2622)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2659)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2670)

<223> n equals a,t,g, or c

<400> 173

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cctcgtgacc tagtggtgagc gggcaaaaag ggtcttgccg gcctcgctcg tgcaggggcg 180
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cttgggtggc

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&lt;210&gt; 174

&lt;211&gt; 1013

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 174

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<210> 175

<211> 1697

<212> DNA

<213> Homo sapiens

<400> 175

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atcacgcccc tgtggatcat cactgctgca cactgtgttt atgacttgta cctccccaag 180
tcatggacca tccaggtggg tctagtttcc ctgttgga ca atccagcccc atcccacttg 240
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aaaaaaaaaa aaaaaaa 1697
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<210> 176

<211> 1409

<212> DNA

<213> Homo sapiens

<400> 176

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cccgggctgc aggaattccg ctgctggcct ggggttgtgg ttgaggccgg gtctccgctc 180
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aaaatgcgac cgctgagcct gagctcacat ccgctggcgc cgcccagccg gagggccccg 360
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```

ggggtgctgc gagctgggaa tatggcgacc cccactctcc ggtcatcctc tgctcttacc 420
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cccaggaact tggttatggg tgtctcaagt tcggcgggtca ggccctacagc gacgtggaac 540
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aaaaaaaaa aaaaaaaaaa aaactcgag 1409

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<210> 177

<211> 1503

<212> DNA

<213> Homo sapiens

<400> 177

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aagttacaga gtgtttccta gatagaagat tagttcattt ggttcatttt gtctttgaag 660
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aaa 1503

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<210> 178  
<211> 1378  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (3)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (82)  
<223> n equals a,t,g, or c

<400> 178  
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cattttctaa ttagaagtca catgataaat ataatacagta tagtaataat accataatgt 1320  
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<210> 179  
<211> 2251  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (2020)  
<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2050)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 179

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&lt;210&gt; 180

&lt;211&gt; 1000

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<400> 180

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<210> 181

<211> 1429

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (761)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1407)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1420)

<223> n equals a,t,g, or c

<400> 181

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gcatgatgcc ctcccctcag cgcaggctgc agagcccggc cccacctccc tgcgcccttg 180
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acctgcgctt ctgctggagg aggggaagct gggcccaaag gccmgsgrag gcagcgtggg 360
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```

```

cagggctgtt ggaggacccc gagggctgag gagcagcagg acccgctgc tcccatcctc 480
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<210> 182

<211> 2725

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2713)

<223> n equals a,t,g, or c

<400> 182

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tacagccagg cctgccaccc cttaggctcc aaagtccgga ggtgcagaaa gccaggacca 180
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tatgggattc acctctactt caccatctg gacattgagc tgtcagagaa ctgtgcgtat 420
gactcagtgc agataatctc aggagacact gaagaaggga ggctctgtg acagaggagc 480
agtaacaatc cccactctcc aattgtggaa gagttccaag tcccatacaa caaactccag 540
gtgatcttta agtcagactt ttccaatgaa gacggtttta cgggggttgc tgcatactat 600
gttgccacag acataaatga atgcacagat tttgtagatg tccctttag ccacttctgc 660
aacaatttca ttggtggtta cttctgctcc tgcccccg aatatttcct ccatgatgac 720
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tttctctttt acctgttcaa aattccattt acttgatcat tctcagtatc cactgtctat 2640
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aaaaaaaaaa aaaaaaaaaa aaaag 2725

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<210> 183

<211> 1751

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (344)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (416)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1617)

<223> n equals a,t,g, or c

<400> 183

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gtggtctgtg ggttctcaga gcagaccacc tgccagggaag tggatcatcg actagcccaa 180
gcaataggcc agactggccg ctttgtgctt gtgcagcggc ttcgggagaa ggagcggcag 240
ttgctgccac aagagtgtcc agtgggcgcc caggccacct gcggacagtt tgccagcgt 300

```

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ctgggctgtg agccccgcaa aacactgacc cccgagccag cccccagcct ctcacgccct 480  
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aaaaaaaaaa a 1751

<210> 184

<211> 2200

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2096)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2140)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2157)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2181)

<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2184)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 184

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catgtgtgtg aaaccatcat ccgcatcttt aaaagacatg gagctgttca gttgtgtact 120
ccactactgc ttccccgaaa cagacaaata tatgagcaca acgaagctgc cctattcatg 180
gaccacagcg ggatgctggg gatgcttcct ttgacctgc ggatcccttt tgcaagatat 240
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caagagtttc cagcacttca ggaaagaaat tacagtattt atttgaacca taccatgtta 480
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&lt;210&gt; 185

&lt;211&gt; 1987

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature



&lt;222&gt; (523)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 185

```

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gggccaaatt cgacacgaga cgcttctcgg cagacgcagc tcgattccag ataggaaaaa 120
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aagcaaagat tgaagacaaa aaagttcaga gagaaagtaa actaacttcc ggaaagttgg 420
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caagtca

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1987

&lt;210&gt; 186

&lt;211&gt; 1737

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 186

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<210> 187

<211> 1132

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1131)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1132)

<223> n equals a,t,g, or c

<400> 187

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agatcctgga gtcccagagg ccccttgcat gcattcctgt agcccatccc agtggtcagg 180
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gtcatatata accgtggtga tggcgtcacg tgccatgta gacgtcacga agagatata 480
cgatggcgct gtgcagatgc agcacgtcgc acacagacat ggggaacttg gcatgacgtc 540
acaccgagat gcagcaacga cgtcacgggc catgtcgacg tcacacatat taatgtcaca 600
cagacgcggc gatggcatca cacagacggg gatgatgtca cacacagaca cagtgacaac 660

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<210> 188

<211> 1267

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (12)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (25)

<223> n equals a,t,g, or c

<400> 188

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ctccttttaa ggataaactc ctttatggtg tgactgtgtc ttattcatct atacttgag 1140
tgggtagatg tcaataaatg ttacatacac aaataaataa aatgtttatt ccatggtaaa 1200
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aaaaata 1267

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<210> 189

<211> 3787

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (155)

<223> n equals a,t,g, or c

<400> 189

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ggtcggcctg gaagcagcca agacggaaaa gcaantgtgt gagcccgaaa acccatgcaa 180
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tggagagggg gacgcctgct ccgtggacat tgatggggac gatgtcttca atgaacgaga 660
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tacttttggg gcttaaagtt gtcactattc ttgaattaga gttgctctac aatgacacac 2220
aatcccrtt aaataaatta taaacaaggg tcaattcaaa tttgaagtaa tgttttagta 2280
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catgtgcagt agagatgcag ttcatcaaa gaacaaacat ccttgcaaat ggggtgtgacg 2460
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aaaaaaa

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3787

&lt;210&gt; 190

&lt;211&gt; 554

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (520)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (542)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 190

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gctgaggcat tttggagatc aaagatgggt agaaaagatg ctgctactat aaaacttcct 120
gttgatcagt acagaaaaca aattggtaaa caggattata aaaaaactaa acctatttta 180
cgagcaacca aattaaaagc agaagcaag aaaacagcaa taggcataaa ggaagttggc 240
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ctcaccacgg atgttgacct tgatctggac caagatgaag attagtaag caacaatcaa 360
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aactgtaaca tctttaattm tttctgctaa tattttcagt ttgcagacat atgatttttg 480

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cngggatact tgta 554

<210> 191

<211> 874

<212> DNA

<213> Homo sapiens

<400> 191

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gcagggaagga cggacttcag gggcagctag aggaaatgac agagcttgaa tctcctaaat 660  
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gaagtgggt ttaggacagc aggtgctgtt ccgagactca gtcctaaagg gttttttttc 780  
ccactaagca aggggccctg acctcgggat gagataacaa attgtaataa agtaacttct 840  
cttttcttct aaaaaaaaaa aaaaaaaact cgag 874

<210> 192

<211> 2103

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (140)

<223> n equals a,t,g, or c

<400> 192

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ctgacggcag aaatttggtga ctgagatgtg acatttggtg tccccatca cttgtcatgc 420  
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tgttggtgtt ccccttacag acaaaatgaa gactatcatg tgcaatcttt tacagtggg 600  
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ttttaacatg ggtttttgtc agatccatgg tcttaggact tgactgatga gctttcagt 780  
aagaatcctc taagataaaa cttctattta aagacttta ctagaaagtg tttatttttg 840  
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<210> 193

<211> 1317

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1314)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1315)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1316)

<223> n equals a,t,g, or c

<400> 193

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ctccagacct catgccttct gggaccacaga catctctgca atctcgggaa ctggaatata 180
ccacttcttg tcaaggtact agcaagttgc cgtggatata gaaatctctg caggcaagtt 240
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gctgtggaca tattgattgc tgtagggtgcc atcatcatga ttctgggctt cctgggatgc 540
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<210> 194

<211> 1252

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1231)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1240)

<223> n equals a,t,g, or c

<400> 194

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<210> 195

<211> 1688

<212> DNA

<213> Homo sapiens

<400> 195

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ccgcagcccg gccccctcac ccatgcgggc cgccaaccga tcccacagcg ccggcaggac 240  
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cggtgaccgc tatatcccc atcgcagtgc tgcccagatg gaggtggcca gcttcctcct 360  
gagcaaggag aaccagcctg aaaacagcca gacgcccacc aagaaggaa atcagaaagc 420  
ctgggctttg aacctgaacg gttttgatgt agaggaagcc aagatccttc ggctcagtgg 480  
aaaaccacaa aatgcgccag agggttayca gaacagactg aaagtactct acagccaaaa 540  
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cctggatgcg cctgaaatcc gaaatgacta ttacctgaac cttgtggatt ggagttctgg 660  
gaatgtactg gccgtggcac tggacaacag tgtgtacctg tggagtgcga gctctggtga 720  
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aaaaaaaaa 1688

<210> 196

<211> 756

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (756)

<223> n equals a,t,g, or c

<400> 196

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aggtagaggc cagggcagcg cgtccgggag cggagtcgag gccgcgcgc gccatgcccg 120

```

acagctggga caaggatgtg taccctgagc ccccgcgccg cacgccggtg cagcccaatc 180
ccatcgctcta catgatgaaa gcgttcgacc tcatcggtga ccgaccggtg accctcgtga 240
gagaatztat agagcggcag cacgcaaaga acaggtatta ctactaccac cggcagtagc 300
gccgcgtgcc agacatcact gagtgcagg aggaggacat catgtgcatg tatgaagccg 360
aaatgcagtg gaagagggac tacaaagtcg accaagaaat tatcaacatt atgcaggatc 420
ggctcaaagc ctgtcagcag agggaaggac agaactacca gcagaactgt atcaaggaag 480
tggagcagtt caccaggtg gccaaaggcct accaggaccg ctatcaggac ctgggggcct 540
acagttctgc caggaagtgc ctggccaaac agaggcagag gatgctgcaa gagagaaaag 600
ctgcaaaaaga ggcgcgcgct gccacctcct gaggcagctg tgggtgcccc tgctgtgtgg 660
ctctgtatga ctgttgctga aatataaagc cctgcaacct gaaaaaaaaa aaaaaaaaaa 720
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaattn 756

```

<210> 197

<211> 1471

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (458)

<223> n equals a,t,g, or c

<400> 197

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ccaagcgttc ctctgccgga catacaagag ttccccaact atgaggtgat tgatgagcag 120
acacccctgt actcagcaga tccaaacgcc atcgatcagg actattacc cggaggctac 180
gacatcgaaa gtgattttcc tccaccccca gaagacttcc ccgcagctga tgagctacca 240
ccgttaccgc ccgaattcag caatcagttt gaatccatcc accctcctag agacatgcct 300
gccgcgggta gcttgggttc ttcatacaaga aaccggcaga ggttcaactt gaatcagtat 360
ttgcccatt tttatccctt cgatatgtct gaacctcaa caaaggcac tggtgagaat 420
agtacttgta gagaacccca tgccccttac ccgccagngt atcaaagaca cttcgaggcg 480
cccgtgtctg agagcatgcc catgtctgtg tacgcctcca ccgcctcctg ctctgacgtg 540
tcagcctgct gcgaagtgga gtccgaggtc atgatgagt actatgagag cggggacgac 600
ggccacttcg aagaggtgac gatcccgccc ctggattccc agcagcacac ggaagtctga 660
ctctcaactc ccccaaagt gcctgacttt agtgaaccta gaggtgatgt gagtaatccg 720
cgctgttctt tgcagcagtg cttccaagct ttttttggtg agccgaatgg gcatggctgc 780
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gggtggtagt ccattatcta gcacctgat tttttttttt tactataacc agggtttcat 1140
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cctgttttaga accaaaacca ccatgacaca gtttttatag tgtctgtata tttgtgatgc 1380
aatggtcttg taaaggtttt taatgaaaac taccattagc cagtctttct tactgacaat 1440
aaattattaa taaaataaaa aaaaaaaaaa a 1471

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<210> 198

<211> 692

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (43)

<223> n equals a,t,g, or c

<400> 198

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agtgcggcct gctcttgga gttcaggctc gggtgtcttt tgggagccat ggagagtgc 120
ttttatctgc gttactacgt ggggcacaag ggcaagtctg gccacgagtt cctggagttt 180
gagtttcgac cggacgggaa gttaagatat gccacaaca gcaattacaa gaatgatgtc 240
atgatcagaa aagaggctta tgtacataaa agcgtgatgg aggaactgaa gagaataatt 300
gacgacagtg aaattaccaa agaggatgat gcattgtggc ctccctcctga ccgagtgggc 360
cggcaggagc ttgaaatcgt cattggagat gaacacattt cttttacaac atcaaaaatt 420
ggttccctta ttgatgtcaa tcaatccaag gatccagaag gcttacgagt attttattat 480
cttgccagg acctgaagtg tttggtcttc agtcttattg gattacactt caagattaaa 540
ccaatctaga ctgaatattg gtgtggacat ggggggtggg tgggagtaga aaattttgtg 600
tatatcaggg cagtattttt ttatgaacta taaatgattg tctttaataa atatgtgata 660
aaatccaatt tttattattt tataaagacc tg 692
```

<210> 199

<211> 1573

<212> DNA

<213> Homo sapiens

<400> 199

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ctcgtgccga attcggcacg agccggcgcc agctacgccg ctgccgctgt cactatggcc 60
cattacaaag ccgccgactc gaagcgtgag cagttccgga ggtacttgga gaagtcgggg 120
gtgctggaca cgctgaccaa ggtgttgga gccttatatg aagaaccaga gaaacctaac 180
agtgccttgg atttttttaa gcatcactta ggagctgcta ctccagaaaa tccagaaata 240
gagctgcttc gcctagaact ggccgaaatg aaagagaagt atgaagctat tgtagaagaa 300
aataaaaaaa tgaaagcaaa gcttgctcag tatgaaccac ctcaggagga gaagcgtgct 360
gaataggatt ctcttcagtt tgaaagacaa tgaaaaatgg ttttgtatga cttgaatagt 420
ttgtatagta tataatcttt tctgaacaga tgctatagaa ctcttttaat atgtttaatt 480
cacctatcac actctgttaa aaacacatag aatcatcaat aaaaactcaa tataactttc 540
tttgggtctt aaagcaggag aatccaaagt aaatcctgaa caaaacctaa acacagccat 600
ctaactcatt accttaaaag acattctgkt tattagtctg attaggaatg atggcactgg 660
ttgtatttta gccaaagacag tttagcatgg agctattcct tgggtgcagt caggatatga 720
acacaggtag agtcattctt tgaagggtgac actgttctgt atattcccta taggcagctg 780
gagagatctg tgtgacacaa gatgcttttg tacgggttcc catgaatctt ctgctcttgt 840
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tgtgtgccag tttgaactct gacaccacat tttccttcta tgcaatcatg cctgtctgat 960
aatcttgcat tgctttcctc tgagctttag tgggtcctag ttgcacactg gcctttctgt 1020
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ggaaaatcat agtttgtagg tataattata tagtgctttt ctccctcaaa gtatttttct 1260
agccttgaat tcattttatc ttcattatcc ctgtgaagta ggtgggacaa gtataagggg 1320
aagaggggtg ctgaattttt aggccaaaga ctgatattaa tacaatacac tcactaactg 1380
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tagagccttg ggcattatca gtgaactact ctgagattta ctgtcttcat ctgtttaatg 1440
agtagaatgt ccgtgatgcc tacctcacag gggtgtgtg aggggtcaaat gagaatgtat 1500
gtgaaagatt tgtaaatggg aaagcactat attcttgta aaaaaaaaaa aaaaaaaaaa 1560
aaaaaaaaaa aaa                                     1573

```

<210> 200

<211> 2742

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (26)

<223> n equals a,t,g, or c

<400> 200

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tattcacaga tgccatcaag ctgaatcctc gcttgcccat tttgtatgcc aagagggccca 120
gtgtcttcgt caaattacag aagccaaatg ctgccatccg agactgtgac agagccattg 180
aaataaatcc tgattcagct cagccttaca agtggcgggg gaaagcacac agacttctag 240
gccactggga agaagcagcc catgatcttg cccttgccctg taaattggat tatgatgaag 300
atgctagtgc aatgctgaaa gaagttcaac ctagggcaca gaaaattgca gaacatcgga 360
gaaagtatga gcgaaaacgt gaagagcgag agatcaaaga aagaatagaa cgagttaaga 420
aggctcgaga agagcatgag agagcccaga gggaggaaga agccagacga cagtcaggag 480
ctcagtatgg ctcttttcca ggtggcttcc ctgggggaat gcctggtaat tttcccgag 540
gaatgcctgg aatgggaggg ggcatgcctg gaatggctgg aatgcctgga ctcaatgaaa 600
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aaccgatttt ttttatccaa tgtgaattat aaatgagata atccacagtt attcattgtg 2040
gagttgttga gactatgaaa gactcattgt ctttgtattc agctcttaaa tagtgtaact 2100

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ctgaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaggggggg gg 2742
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&lt;210&gt; 201

&lt;211&gt; 1417

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 201

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ttgggtgaag agtaccctga agtattgggc agcattcttg gagcactgaa ggccattgta 120
aatgtcatag gtatgcataa gatgactcca ccaattaaag atctgctgcc tagactcacc 180
cccatcttaa agaacagaca tgaaaaagta caagagaatt gtattgatct tgttggtcgt 240
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atgtttaatt gagaaataaa catttggtga caaatgcta aaaaaaaaaa aaaaaaaaaa 1380
ctcgaggggg gcccgtagcc aattcgccgt atagtga 1417
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&lt;210&gt; 202

&lt;211&gt; 1512

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (855)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1512)

<223> n equals a,t,g, or c

<400> 202

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aacttgagga gtactcgggt tcgtgaactt cccggaggcg caatgagctg cattaacctg 120
cccactgtgc tgccyggctc cccagcaag acccgggggc agatccaggt gattctcggg 180
ccgatgttct caggaaaaag cacagagttg atgagacgcg tccgtcgtt ccagattgct 240
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accttycaga ggaagccatt tggggccatc ctgaacctgg tgccgctggc cgagagcgtg 540
gtgaagctga cggcggtgtg catggagtgc ttccgggaag ccgcctatac caagaggctc 600
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attctgcaat gcagccctgc caactgaggg acctgcgagg gccgcccgtt cccttctgc 840
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tgggacttgg atcccagggg cttatctctt caagtgtgga gagggcaggg tccacgcctc 1440
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aaaaaaaaa an 1512

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<210> 203

<211> 419

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (384)

<223> n equals a,t,g, or c

<400> 203

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tccggggagc ctggagctgg ggggaaggcc ggggacagcc cggccctgcc ccctcccccg 120
ctgggagccc agcaacttct gaggaaagtt tggcacccat ggcgtggcgg tgccccagga 180
tgggcagggt cccgctggcc tggctgttgg cgctgtgcgg ctggggcgtg catggcccc 240
aggggcacgc argctgaaga aagtcccttc gtgggcaacc cagggaatat cacaggtgcc 300

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cggggactca cgggcaccct tcggtgtcag ctccagggtc agggagagcc ccccgaggta 360  
cattggcttc gggatggaca gatnctggag ctgcgggaca gcacccagac ccagggtgtt 419

<210> 204

<211> 2833

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2802)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2822)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2831)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2832)

<223> n equals a,t,g, or c

<400> 204

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gggcgagcag cctgcaggcg cgggcggcgg cccaccatg gcgattcgca agaaaagcac 180  
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&lt;210&gt; 205

&lt;211&gt; 5830

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (5584)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (5585)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (5821)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 205

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&lt;211&gt; 755

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

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<223> n equals a,t,g, or c

<400> 206

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<211> 1996

<212> DNA

<213> Homo sapiens

<400> 207

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<210> 208

<211> 1668

<212> DNA

<213> Homo sapiens

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<222> (1620)

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<210> 209

<211> 2250

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (23)

<223> n equals a,t,g, or c

<400> 209

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ggaccctcgc gtcgtcgcgc ccgcccgcgc ccagatcccc gcaccatgcc gtcggagaag 180
accttcaagc agcgcgcgac cttcgaacaa agagtagaag atgtccgact tattcgagag 240
cagcatccaa ccaaaatccc ggtgataata gaacgataca aggggtgagaa gcagcttcct 300
gttctggata aaacaaagt ccttgtaacct gaccatgtca acatgagtga gctcatcaag 360
ataattagaa ggcgcttaca gctcaatgct aatcaggcct tcttctctgt ggtgaacgga 420
cacagcatgg tcagcgtctc cacaccaatc tcagaggtgt atgagagtga gaaagatgaa 480
gatggattcc tgtacatggt ctatgcctcc caggagacgt tcgggatgaa attgtcagt 540
taaaaccaga aaaaatgcat ctcttctaga attgtttaaa cccttacc aa gaaaaaaa 600
ggggtgttac caactgagat cgatcagttc atccaatcac agatcatgaa acagtgtgt 660
tcccacctag gagtgttagg aagtgtgtgt tgtgtttcaa gcagaaaaac tgagctccaa 720
gtgagcacat tcagctttgg aaactatatt atttaagtga ggctagcttg ttttcaaatt 780
ttaaaagtgt aaaaataaaa tactttgcat tctaagttgc caataaaata gaccttcaag 840
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tcagtattac tgaaaaggta cccacatttt gaatagtagt tatcactctt aggtcagaca 1560
gccatcagaa ttctcccaca ccaagtgcac gtcagttgtg gagaaaacat agcaaaaaga 1620
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gccgtacgct ctttacagat actaatgtca agagttaaac ctcctcaggt tcaacctgtg 1680
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gtcacctgct cccccaccc ccgcatgctg ctgtccactt ggctaacttt taatatgtgt 1980
atttttacat tatgtatatt cttaactgga ctgtctcgtt tagactgtat acatcatatc 2040
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aggatcttta aaacattttt aatgaactaa gttgaataaa ggcacaatta aaaactgtca 2220
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2250

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&lt;210&gt; 210

&lt;211&gt; 838

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 210

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ggcgggccta cgtgctccgc ccgctgtgag cctgtccggc ccccgccgc tccggagcaa 60
cccgcgagct tacaccggct tctctctgtc ctccagccgc gcgccgccat cgcgctcatg 120
ctgggcgccc ctctccgccg ctgcgctgtg gccgcaacca cccgggccga ccctcgaggc 180
ctcctgcact ccgcccggac ccccgcccc gccgtggcta tccagtcagt tcgctgctat 240
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aagccagata tagatgcctg ggaattgcgt aaagggataa acacacttgt tacctatgat 360
atggttccag agcccaaat cattgatgct gctttgcggg catgcagacg gttaaatgat 420
tttgctagta cagttcgtat cctagagggt gttaaggaca aagcaggacc tcataaggaa 480
atctaccctt atgtcatcca ggaacttaga ccaacttta atgaactggg aatctccact 540
ccggagggaac tgggccttga caaagtgtaa accgcatgga tgggcttccc caaggattta 600
ttgacattgc tacttgagtg tgaacagtta cctggaaata ctgatgataa catattacct 660
tatttgaaca agtttccctt tattgagtag caagccatgt aatggtaact tggactttaa 720
taaaagggaa atgagtttga actgaaaaaa aaaaaaaaaa aaactcatac agactgaagc 780
gcggtgatta aataatgaaa gagttcgacg cggccgggaa tttaggagggt aaatatcc 838

```

&lt;210&gt; 211

&lt;211&gt; 1213

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1206)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 211

```

gcccacgcgt ccggcaggaa ccgcggtgc tggacaagag ggggtcggtg gatactgacc 60
tttgctccgg cctcgctcgt aagacacagc gcatctcccc gctgtaggct tcctcccaca 120
gaaccggtt cgggcctcag agcgtctggt gagatgctgt tgccgctgct gctgctgcta 180
cccattgctt gggccgtgga ggtcaagagg ccccgggcg tctccctcac caatcatcac 240
ttctacgatg agtccaagcc ttccacctgc ctggacggtt cggccaccat cccatttgat 300
caggtcaacg atgactattg cgactgcaaa gatggctctg acgagccagg cacggctgcc 360
tgtcctaatt gcagcttcca ctgcaccaac actggctata agccctgta tatccctcc 420

```

```

aaccgggtca acgatggtgt ttgtgactgc tgcgatggaa cagacgagta caacagcggc 480
gtcatctgtg agaacacctg caaagagaag ggccgtaagg agagagagtc cctgcagcag 540
atggccgagg tcacccgcga agggttccgt ctgaagaaga tccttattga ggactggaag 600
aaggcacggg aggagaagca gaaaaagctc attgagctac aggctgggaa gaagtctctg 660
gaagaccagg tggagatgct gcggacagtg aaggaggaag ctgagaagcc agagagagag 720
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tcggtgactg agctgcagac tcacccggag ctggacacag atggggatgg ggcgttgtca 900
gaagcgggaag ctcaggccct ytcagtggg gacacacaga cagacgccac ctctttctac 960
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ccagccctgt ccctgccacc cctcctagtg gggactagtg aatgacttga cctgtgacct 1140
caatacaata aatgtgatcc cccacccaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1200
aaaaaaaaaa aaa                                     1213

```

<210> 212

<211> 969

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (922)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (955)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (958)

<223> n equals a,t,g, or c

<400> 212

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aaggaaccca agcagaaatc tttgtatgta tatgtatgaa gaggttgtct gtttttagga 120
gttgtatgta aaagctaagg aaaccttttc ttttggaaga tcagtataaa catgctgctt 180
ttggtaaaat tcttttgagc cattttcatc taaatataac ttctgtttca ttttttttcc 240
taaataatac tcagagttaa atgagggctt ttcacatgga acaagctttt gagagggcct 300
gtgttgctga agttttcgcc cttggattgc tggggtgata ttggtgacaa actctgtagg 360
gaaggactgg gaacctgtca atcttttttc tttggttggg tggattgggc agggaatagc 420
tgacttgatt tgttataagt ttggaagggt atagtttggt cacattcttc attgatcaca 480
cttttaggga ttcttgaaga aaagggaagc aaaacataca cacacacccc cacccaatct 540
aacagcgtat tcaagcagat tccacgaatc ctcggccag gtttaaataa ggcaggaaaag 600
ttcccttccc tgctcacaca caacgaaaac atgggtggcca aagtggatga ggtgaagtcc 660
acaatcaagt tccaaatgaa gaaggtgtta tgtctggctg tagctgttg tcaagtgaag 720
atgacagacg atgagcttgt gtataacatt cacctggctg tcaacttctt ggtgtcattg 780
ctcaagaaaa actggcgaaa tgtccgggcc ttatatatca agagcaccat gggcaagccc 840
cagcgcctat attaaggcac atttgaataa attctattac cagttaaaaa aaaaaaaaaa 900

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aaaaaaaaa aaaaaaaaaa anaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaanccncg 960  
ggggggggg 969

<210> 213

<211> 1694

<212> DNA

<213> Homo sapiens

<400> 213

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gcgatggcca aggtgtcggg gctgaacgtg gcggtccttg agaaccgcgag ccctttccac 180  
agccccttcc ggttcgagat cagcttcgag tgcagtgaag ccctggcgga cgacctggag 240  
tggaagatca ttatgttg gctcggtgag agtgaggaat ttgatcagat cctagactcg 300  
gtgctgggtg gccctgtgcc agcagggaga cacatgtttg tctttcaggc cgacgcccc 360  
aaccatccc tcatcccaga gactgatgcc gtgggtgtga ctgtggtcct catcacctgc 420  
acctaccatg gacaggagtt catccgagtg ggctactacg tcaacaacga gtacctcaac 480  
cctgagctgc gtgagaaccc gcccatgaag ccagatttct cccagctcca gcggaacatc 540  
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ctggaggcca tagagacca ggaccctcc ctgggctgcg gcctcccact caactgcact 660  
cctatcaagg gcttggggct ccctggctgc atccctggcc tcctccctga gaactccatg 720  
gactgcatct aactgcagga acccagagtg tcccagcacg ccgggagggg caaccaggcc 780  
tcccagcgag tcctgcaggg cccatctaga ggaytttggg ggccatcagc ttgcaatcca 840  
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ctctgtgccc tgggtcccctt gctgccatgt ggatgctgtt gtgattgctg tttgtatatt 1620  
atcaaaatgt ttttatatta aaaatgtttg gtctgaaaat taaaagcact tcatttgaaa 1680  
aaaaaaaaa aaaa 1694

<210> 214

<211> 1210

<212> DNA

<213> Homo sapiens

<400> 214

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tggttaccat tatcccaac ttcagtcttg acaagatcta cctcatcggg ggggaccttg 180  
ggccttttaa ccctggttta ccggtggaag tgcccctgtg gctggcgatt aacctgaaac 240  
aaagacagaa atgtcgccctg ctccctccag agtggatgga tgtagaaaag ttggagaaga 300  
tgagggatca tgaacgaaag gaagaaactt ttacccaat gccagccct tactacatgg 360



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aacttacgaa gctcctgtta aatcatgctt cagacaacat cccgaaggca gacgaaatcc 420
ggaccctggg caaggatatg tgggacactc gtatagccaa actccgagtg tctgctgaca 480
gctttgtgag acagcaggag gcacatgcc a gctggataa cttgacctg atggagatca 540
acaccagcgg gactttcctc acacaagcgc tcaaccacat gtacaaactc cgcacgaacc 600
tccagcctct ggagagtact cagtctcagg acttctagag aaaggcctgg tgcaggcggc 660
ttgctggggg atgtgagcgc tcaggacgtg atgaggtact cgtgggttctg gagctctaga 720
aacacttctg atgcatgaaa aatgtgtgat ggtgcaagga atggattcag gatgttgtt 780
gagaaacaag tttgtgatta gtccttaaaa cttagctccc tgggacattc ttcaattcca 840
catctgtttc tagaaaccag ccctttttcc ccccaacttt gagaaataaa aaagccttag 900
gtaataaagt cattctccct agcagagcca cttgggtctc ctgcatggaa gccatcacac 960
ttgggcaggt gttcagtac tggtaggtgt agatacagca ggagtggcca tgtggtccac 1020
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tggtcacag agaaggatgg cagatggtgc agccaacaat gctgaccggg gcttatcctc 1140
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agagagagac                                     1210

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&lt;210&gt; 215

&lt;211&gt; 1776

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 215

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tagctgcact aggtgattct tggagcgggc ctgagagaca aggacatgtg gatcccagtg 120
gtcgggcttc ctcggcggtc gaggtctctc gccttggcgg gcgctggtcg cttttgcatt 180
ttagggctct aagcggcgac gcgaaagcat ttgccggcga ggaaccactg tgggtctctc 240
gactcctctc cgcagctgtg gcccgaaccg gatttcagga atccgccaag gaaggcgtct 300
aaggccagct tagactttaa gcgttacgta accgatcgga gattggctga gaccctggcg 360
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cctggaatcc tgactcaggc attacttgaa gctggtgcc aagtggttgc gctcgaaagt 480
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aaatatttca cttgtactgt tgctgatttt tgcattctct tgaagagcaa gagtctgtac 1620
attattaagc ttagaaaagta agcaaaactg atttactggg ttgcctttca gtttgttgaa 1680
atgtattgtc aagtactgta caatgaaatt gtttaaattt taatatgatt taagcttttt 1740

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agaaattaaa atatttttaa taagaaaaaa aaaaaa

1776

<210> 216

<211> 1418

<212> DNA

<213> Homo sapiens

<400> 216

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gccatacaga atttgtgtatt caccagcatc atgaaacagt tgtggtcttt tgagttgatc 180  
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acttcactta gagactggag tcctgcttat aatcatgcat ataaccttta ctttgatgga 360  
tctggccaga ggggtgttgg agcccagccc acccacatac cagtcaagct cttaggggag 420  
cagaagaaaa gcaggaagaa tttaaagtgt taattttttt tttaaattga cttttctagt 480  
tattaaaagt tgcttgtttc agcagtgata ttgtataaag aacatcttgt aagatactcc 540  
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cccgttctga cctcagcctt ggaactcctc aagaacctga agattccagt ggtcagtgct 780  
gggtgggggt gggaggagag agcggcagag aagctctgag agccccctcc cccacaacaa 840  
atctagctct agttgttata tttaggcaaa actttgtagt cttctttccc ttttatgatg 900  
gattttgata aaagtacaaa acagggtttt tcttttttat cacccttgaa tttggaaatt 960  
ttgagacccc aagctcttct gtacctattt aaagtccacc aaggggactg cagctcctag 1020  
aacatgagaa tcaagcctct taatttttaa ctgcggaatg tggcctctgc ttcctccgtc 1080  
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acacctgaat tgtttgttgt tgtttttttt ttttattgtc ttcaaagagg aagggcccca 1320  
ttaaagggtg aacttgtaat aaattggaat ttcaaataaa cctcatgtac ttgtgtttat 1380  
aaagaagaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 1418

<210> 217

<211> 2200

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2188)

<223> n equals a,t,g, or c

<400> 217

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cacgagtgcc gccagcatgt ctgacaaact gccctacaaa gtcgccgaca tcggcctggc 120  
tgcttgggga cgcaaggccc tggacattgc tgagaacgag atgccgggcc tgatgcgtat 180  
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gcagaccctg tacttcaagg acgggcccct caacatgatt ctggacgacg ggggcgacct 480  
caccaacctc atccacacca agtaccgcga gcttctgccg ggcatccgag gcatctctga 540  
ggagaccacg actgggggtcc acaacctcta caagatgatg gccaatggga tcctcaagggt 600  
gcctgccatc aatgtcaatg actccgtcac caagagcaag ttgacaacc tctatggctg 660  
ccgggagtcc ctcatagatg gcatcaagcg ggccacagat gtgatgattg ccggcaagggt 720  
agcgggtgta gcaggctatg gtgatgtggg caagggtgtg gccaggccc tgcgggggtt 780  
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gggctatgag gtgaccacca tggatgaggc ctgtcaggag ggcaacatct ttgtcaccac 900  
cacaggctgt attgacatca tccttgcccg gactttgag cagatgaagg atgatgccat 960  
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<210> 218

<211> 1853

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (890)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1794)

<223> n equals a,t,g, or c

<400> 218

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<210> 219

<211> 1093

<212> DNA

<213> Homo sapiens

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<222> (1090)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1091)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1092)

<223> n equals a,t,g, or c

<400> 219

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&lt;210&gt; 220

&lt;211&gt; 2155

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 220

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<210> 221

<211> 1264

<212> DNA

<213> Homo sapiens

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<221> misc feature

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (17)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (125)

<223> n equals a,t,g, or c

<400> 221

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&lt;210&gt; 222

&lt;211&gt; 2085

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 222

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<210> 223

<211> 2921

<212> DNA

<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2919)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2920)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2921)

<223> n equals a,t,g, or c

<400> 223

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<210> 224

<211> 4395

<212> DNA

<213> Homo sapiens

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<220>

<221> misc feature

<222> (4382)

<223> n equals a,t,g, or c

<220>

<221> misc feature

&lt;222&gt; (4391)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 224

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&lt;210&gt; 225

&lt;211&gt; 3035

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2911)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2959)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 225

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&lt;211&gt; 1511

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 226

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<210> 227

<211> 2239

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2238)

<223> n equals a,t,g, or c

<400> 227

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&lt;210&gt; 228

&lt;211&gt; 2346

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 228

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cttctgtttg gtcttagagt gtttgatat aactgaattg tagatggtaa aggaaatttg 2280
atgtgttttt tgtttttaaa taattaaaaa gggatcaatt ttcaaaaaaa aaaaaaaaaa 2340
aaaaaa                                     2346

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<210> 229

<211> 2246

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2235)

<223> n equals a,t,g, or c

<400> 229

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ggcacagcgc cgggtggcgc tgcggcaaca gcggggccga tgtgtagttg gtgactgcct 60
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ggctgtgcct tctgaagcag tatctattca caatgaagtt gcagtctccc gaattccagt 180
cacttttcac agaaggactg aagagtctga cagaattatt tgtcaaagag aatcacgaat 240
taagaatagc agggaggagca gtgagggatt tattaatgg agtaaagcct caggatatag 300
atthtgccac cactgctacc cctactcaaa tgaaggagat gtttcagtcg gctgggattc 360
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atthtgagat tactacacta cggattgatg tcaccactga tggaagacat gctgaggtag 480
aatttacaac tgactggcag aaagatgcgg aacgcagaga tctcactata aattctatgt 540
tttaggttt tgatggcact ttatttgact actttaatgg ttatgaagat ttaaaaaata 600
agaaagttag atthgttgga catgctaaac agagaatata agaggattat cttagaattt 660
taagatactt cagggttttat gggagaattg tagacaaacc tggtgaccat gatcctgaga 720
ctthggaagc aattgcagaa aatgcaaaag gcttggtctg aatatcagga gaaaggattt 780
gggtggaact gaaaaaaatt cthgttggt accatgtaaa tcatttgatt caccttatct 840
atgatcttga tgtggctcct tatataggt tacctgctaa tgcaagttta gaagaatttg 900
acaaagtcag taaaaatgtt gatggttttt caccaaagcc agtgactctt ttggcctcat 960
tattcaaagk acmagatgat gtcmaaaat tggawttgag gttgaagatc gcgaaagagg 1020
agaaaaacct tggcttattt atagttaaaa ataggaaaga ttaattaaa gcaacagata 1080

```

```

gttcagaccc attgaaaccc tatcaagact tcattataga ttctagggaa cctgatgcac 1140
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cagtgggtcca ttctccatt tcctgtaagt ggccatgaca tcagaaaagt gggcatttct 1260
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<210> 230

<211> 2002

<212> DNA

<213> Homo sapiens

<400> 230

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tctagactag tggatccccg ggctgcagga attcggcacg agatggcggc agcgatgcct 60
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ctgtcggagt gctggatgga gcctttctct gccctctgtg acatttccaa ttttagataa 180
tgctcacat ctctgtcccc cggggacccc ctggagcccc catgatccct aagaagacag 240
cttgaaaccta gatctcacc ccaggatgtt gcggaggctg ctggagcggc cttgcacgct 300
ggcctgctt gtgggctccc agctggctgt catgatgtac ctgtcactgg ggggcttccg 360
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tgatgtctac agtaacctca gtcacctgcc tggggcccca rggggtctc carctcctca 480
aggtctgccc tactgtccag aacgatctcc tctcttagtg ggtcctgtgt cgggtgtcctt 540
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tgcccgagg caccacctgc gcctgtgtct ctaccacctg cacccttctt tgcagcgcca 720
gcagcttget tatggcatct atgtcatcca ccaggctgga aatggaacat ttaacagggc 780
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```



```
acactgactc ctccctcctg tctaccttaa tcatgaaacc gaattcatgg ggttgatttc 1500
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gtgctagggg gtaggggcct ctccctcaact gctggactgg agctgggctc ctgtagacct 1620
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ttttctgcct atgctggaat agctccctct tctggtcctg gctcaggggg ctgggatttt 1920
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aaaaaaaaaa aaaaaaaaaa aa 2002
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<210> 231

<211> 994

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (394)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (853)

<223> n equals a,t,g, or c

<400> 231

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cgggaggggt gtgtgtacag agctctagga ctcacgcacc aggccagtcg cgggttttgg 120
gccgaggcct gggttacaag cagcaagtgc gcggttgagg ccactgcgag gccgttttag 180
aaaactgttt aaaacaaaga gcaattgatg gataaatcag gaatagattc tcttgacctt 240
gtgacatctg atgctgtgga acttgcaaat cgaagtgata actcttctga tagcagctta 300
tttaaaactc agtgtatccc ttactcacct aaaggggaga aaagaaaccc cattcgaaaa 360
tttgttcgta cacctgaaaag tgttcacgca agtnattcat caagtgactc atcttttgaa 420
ccaataccat tgactataaa agctattttt gaaagattca agaacaggaa aaagagatat 480
aaaaaaaaaga aaaagaggag gtaccagcca acaggaagac cacggggaag accagaagga 540
aggagaaatc ctatatactc actaatagat aagaagaaac aatttagaag cagaggatct 600
ggcttcccat ttttagaatc agagaatgaa aaaaacgcac cttggagaaa aattttaacg 660
tttgagcaag ctggtgcaag aggatttttt aactatattg aaaaactgaa gtatgaacac 720
cacctgaaag aatcattgaa gcaaatgaat gttggtgaag atttagaaaa tgaagatttt 780
gacagtcgta gatacaaatt tttgatgat gatggatcca tttctcctat tgaggagtca 840
acgtaagtgg aantcatatg aaatactttg gtaatagggt ataaattaaa tttctatggt 900
aattgcttca tattttgcct ttaatatagt tataacttaa taatgaacaa agatacagag 960
tatgacaatt gggattatta cagttgagcc aagc 994
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<210> 232

<211> 486

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature  
 <222> (49)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (440)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (485)  
 <223> n equals a,t,g, or c

<400> 232  
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 cgacccacgc gtccgggaac agccttctcc tgccctctct gcacctggac aactcaactc 120  
 ctgccaagat gtccgtgccag cagaaccagc agcagtgcca acccccaccc aagtgtccct 180  
 cacc caagtg tccccaaaag agcccaagtac agtgtctgcc tccagcttcc tctggctgtg 240  
 ccccaagctc tgggggctgt ggcctagctc cgaggggcgc tgcttcctga accaccacag 300  
 gcgccaccac cgatgccggc gccagaggyg caactcctgt gacagggcag tggtcagcaa 360  
 ggcgrgggyt ctggstgckg cayggttctg ggggctgctg ctgatccaga tcctgatgct 420  
 gagacaagcg atctttggan gaaacaagaa ttcccaagag gccagaaca gcccctctg 480  
 gaagnc 486

<210> 233  
 <211> 2081  
 <212> DNA  
 <213> Homo sapiens

<400> 233  
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 taagtctttt ggaggacgaa caactggagg ttgcagaaat ggctgtact accttaagcg 180  
 gtctgtctaca gtgtaacttt cttaccatgg acagtcctat gcagattcat ttgagcaac 240  
 ttgcaaaac aaaactacct aagaaaagaa agcgagaccc tggttctgta ggagatacca 300  
 ttcttctctg agagttggtc aaacgccatg ctgggggtgct aggacttggg gcatgtgttc 360  
 ttcttagtcc ttacgatgtt cccacctgga tgccccagct cctcatgaat ctcagtgcac 420  
 atctaaatga tcctcagcct attgagatga ctgtaaaaaa aaccttatcc aatttccgaa 480  
 gactcaccat gacaactggc aggaacataa acagcaattc actgatgacc aactgcttgt 540  
 tctcaccgat cttcttgtgt caccatgcta ttatgcatag aaagatgact agtcctcact 600  
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 tagaaataat taccagtat gatcatggca tccaagacca gagtctcaga actcattaag 900  
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 tgggccataa atctgaagcc ttgagaacct tgggtctgga gagccatgaa gaggggaagg 1080  
 aaagagggca agtcctgaac ctaaccaatg acctgatgga ttgctcgacc aagacacaga 1140  
 agtgaagtct gtgtctgtgc acttcccaca gactggagtt tttggtgctg aatagagcca 1200

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gttgctaaaa aattgggggt ttggtgaaga aatctgattg ttgtgtgtat tcaatgtgtg 1260
atttttaaaaa taaacagcaa caacaataaa aacctgact ggctgttttt yccctgtatt 1320
ctttacaact attttttgac cctctgaaaa ttattatact tcacctaaat ggaagactgc 1380
tgtgtttgtg gaaattttgt aattttttwa ttattttwat tctctctccc tttttatttt 1440
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tgcaaccttt tacacaacat cattgtgtaa ttgtaaaaga ttcacrtgta gttctttatt 1620
atagtgattt tgggctttgt acccactgaa tgccattttt tgtgttttta aattattttc 1680
tttatcttgt tacaaaaact gagatgtggg gttttttttt ttcagttcac ttatcattag 1740
aatgtctgaa cttttatgta acatttttgt gtgcattctc caatgctaac accacatggt 1800
tgccatagac aagtttatag agtgaaaggg tatcttctgg gttgaaataa ttcacaaatt 1860
ggtgaatgtc atcttgcaac acaccctgta cagtcttcct taaaggaaca ctacagtata 1920
tttttagtat ctacatgctg aatgactgaa tacagacctt aagacagcag tgstcctggg 1980
acagtattta agtgctggca tacacaggcg taatccctgt ataaagtagt gccaaactga 2040
tttcagttgt gtaactagtt taaaacccaa taaatggatt c 2081

```

<210> 234

<211> 516

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (490)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (498)

<223> n equals a,t,g, or c

<400> 234

```

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gagaggggtg gaagatgtct atggatgtga cattcctggg gacgggtgca gcatacccat 120
ctccaaccgg ggggtgcctc gctgtgggtc ttcgggtgtga aggcgagtsc tggctctttg 180
actgtgggga gggaaacacag acacagctta tgaaaagcca acttaaagca gggagaatta 240
ccaagatctt catcacacac cttcatggag accatttctt tggccttcct gggctcctct 300
gcacaatcag cctgcagagt ggctccatgg tgtccaaaca gcctattgaa atctatggcc 360
ctgtaggctt cgggacttta tctggcgaac catggaaact tctcamacgg gagctgggtc 420
tccattatgt ggttcattgaa ctggttccta cagcagatca atgtcctgca gaaggaacta 480
aaagaatttn cgcattgtnaa tagagcagac agtcct 516

```

<210> 235

<211> 1129

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (807)

<223> n equals a,t,g, or c

&lt;400&gt; 235

```
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ctgcctaacc ttgagttggc ccccaatccc tctggctgca gaagtcccct taccaccaat 120
gagaggaggg gcaggaccag atcttttgag agctgagggg tgagggcatt gagccaacac 180
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aatggaactg aggaagatta taactttgtc ttcaagggtg tgctgatcgg cgaatcagg 300
gtggggaaga ccaatctact ctcccgattc acgcgcaatg agttcagcca cgacagccgc 360
accaccatcg gggttgagtt ctccaccgcg actgtgatgt tgggcaccgc tgctgtcaag 420
gctcagatct gggacacagc tggcctggag cggtaaccgag ccatcacctc ggcgtactat 480
cgtggtgcag tgggggccct cctggtgttt gacctaacca agcaccagac ctatgctgtg 540
gtggagcgat ggctgaagga gctctatgac catgctgaag ccacgatcgt cgtcatgctc 600
gtgggtaaca aaagtgacct cagccaggcc cgggaagtgc ccactgagga ggcccgaatg 660
ttcgtgaaa acaatggact gctcttcctg gagacctcag ccctggactc taccaatgtt 720
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aacagcatcc ggaccaatgc catcacntct ggcagtgcc aggttgaca ggagcctggc 840
cctggggaga agagggcctg ttgcatcagc ctctgacctt ggccagcacc acctgcccc 900
actggctttt tgggtgccct tgtccccact tcagccccag gacctttcct tgccctttg 960
ttccagatat cagactgttc cctgttcaca gcacctcag ggtcttaagg tcttcatgcc 1020
ctatcacaaa tacctctttt atctgtccac cctcacaga ctaggaccct caaataaagc 1080
tgttttatat caaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1129
```

&lt;210&gt; 236

&lt;211&gt; 1045

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (973)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1001)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1014)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 236

```
atctcaaag gcagctcagg ctccgtgtgg ctgcgcaacc tgcaactggg cctcttcggc 60
acagcactgg gcctggtggg gctctggtgg gctgagggta ccgccgtggc caccctgggt 120
ttcttttttg ggtacacacc tgctgtctgg ggcgtggtgc tcaaccaggc cttcggcggg 180
ctactgggtg ctgtggttgt caagtacgct gacaatatcc tcaagggctt tgccacctcc 240
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ggtgcagyca aagccatagc ctctgcctct gcctccgcct ccgggccctg cgttcaccag 420
cagcctcccg ggcagccacc accaccgcag ctgtcttccc accgtggaga cctcatcacg 480
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gagccctttc tgccaaagtc agtgctggtg aagtragggc tggcagcaat ggggggacac 540
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cggggcctgg ctctctctggg tttgggagat ggtcttttct cccagggtcac tgagacttct 660
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gcttttctcc ttncacgttg atatgtatag tcgctttggg nctgccagtt cttntacttg 1020
aatgcttctg gagccaggaa aggca 1045

```

<210> 237

<211> 690

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (666)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (678)

<223> n equals a,t,g, or c

<400> 237

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aagctgtggc tctgactctg caggaggaca gagcatccct gacgctttca ggggggccct 120
cggcactggc ctttgacctc tccaaggtag caggcccaga ggcagcccc aggctgyggg 180
cgctgacact gggcctggca aaacgcgtgt ggagcctgga gcggcgactg gcagctgcag 240
aagagacagc tgtcagcccc aggaagagcc cccggcctgc agggcctcag ctcttcttac 300
cagaccaga tccccagaga ggtggccctg gacctggagt caggaggcgg tgtccaggag 360
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aggactaaca cggtcctca aattccttcc ctgtcaaata aacagctccc ttggttgga 600
aaaaaaaaaa aaaaaaaaaa agtttttttt aattttaagg cgggccaaag ttttttttcc 660
tttttngttg aagggttnat tttttagttt 690

```

<210> 238

<211> 1873

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (568)

<223> n equals a,t,g, or c

<400> 238

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aagctctctg gaccttggag caggcctgcc gccttcattg ccactctcct catcaatcag 120
ccccagtatg cgtggctgaa agagctgggg ctccgcgagg aaaacgaggg cgtgtataat 180
ggaagctggg gagggcgggg agaggttatt acgacctatt gccctgctaa caacgagcca 240
atagcaagag tccgacaggc cagtgtggca gactatgaag aaactgtaaa gaaagcaaga 300
gaagcatgga aaatctgggc agatattcct gctccaaaac gaggagaaat agtaagacag 360
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gctgktggtt tatcaaggat gattggagga cctatcttgc cttctgaaag atctggccat 540
gcactgattg agcagtggaa tcccgtangc ctggttgga tcatcacggc attcaatttc 600
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<210> 239

<211> 905

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (873)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (874)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (897)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (898)

<223> n equals a,t,g, or c

<400> 239

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<210> 240

<211> 1484

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1457)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1471)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1480)

<223> n equals a,t,g, or c

<400> 240

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atcttataaa ttcaacagac acaaaagaat ttgatctccc ataagcaact gtgaaattac 240
aataacagat cctgggaagt tctacaattc taattcagtt ttttcaaggg ggaacatggc 300
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ccgggtcaaaa cagcaacagg tcaagatcaa gcagcttttg caggagaatg aagtccagtt 480
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aaacaacaaa tatgaanaaa aaaaaaaaaa nggggggctn tttt 1484

```

&lt;210&gt; 241

&lt;211&gt; 1521

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 241

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<210> 242

<211> 1144

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1093)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1105)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1106)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1139)

<223> n equals a,t,g, or c

<400> 242

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 gaaaggatga tttttattac ttgtctcaag aagacaaaga gagacagaag cgtgagcatg 240  
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 cagaaaggca gaagtggaag caacttctat ttagtgatca tgtgtttctt catatagctt 360  
 taaaattatg ctattgacat tatgggaaag atttatcaat gagagaaatg tgtctctttt 420  
 tcagccgtgt tgaaatcctt gtctcctgta gacccagtgg aaccataag taattcagaa 480  
 ccatcaatga attcagatat gggaaaagtc agtaaaaatg atactgaaga ggaaagtaat 540  
 aaatccgcca caacagacaa tgaaataagt aggactgagt atttatgtga aaactctcta 600  
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 gccctccaa ctcccaggga ctcatcagag ccctccatta agcagaggct ggcacggcta 780  
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<210> 243

<211> 934

<212> DNA

<213> Homo sapiens

<400> 243

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<210> 244

<211> 915

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (210)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (243)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (244)

<223> n equals a,t,g, or c

<400> 244

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gaccaccacc agctgcgctc actgactggc ctcatccgaa acctgtctcg gaacgctagg 180
aacaaggacg agatgtccac gaaggtggtn gagccacctg atcgagaagc tgccrggcas 240
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agtcctctt catcaagaag aagcgggaca gccccgacag tgagaagtcc tcccgggcag 420
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ccatgaacag tcaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 900
aaaaaaaaaa aaaac 915

```

&lt;210&gt; 245

&lt;211&gt; 1276

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 245

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&lt;210&gt; 246

&lt;211&gt; 3366

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 246

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ttctgcagtc gtgtcattga tgaagaactc aaccacagt ggggagagac ttatgaggtg 360
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aggacttggg acagcagggc caattttttt gcccaagtgc ctaggctgct aactcactga 3240
ctagaactta atctggtact ttacagtttt gcaccaactc tgccaagcca ctggatctta 3300
cattaaacat catactcaaa aaaaaaaaaa aaaaaaaatt cggggggggg cccgttacc 3360
atttgg

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<210> 247  
<211> 2148  
<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc feature  
<222> (1259)  
<223> n equals a,t,g, or c

<400> 247  
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cgtggcgcca gcggaggcag gttgmtgtgt ttgtgcttcc ttctacagcc aatatgaaaa 180  
ggcctaagtt aaagaaagca agtaaacgca tgacctgcca taagcgggat aaaatccaaa 240  
aaaaggttcg agaacatcat cgaaaattaa gaaaggaggc taaaaagcrg ggtcacaaga 300  
agcctaggaa agaccagga gttccaaaca gtgctccctt taaggaggct cttcttaggg 360  
aagctgagct aaggaaacag aggcttgaag aactaaaaca gcagcagaaa cttgacaggc 420  
agaaggaaact agaaaagaaa agaaaacttg aaactaatcc tgatattaag ccatcaaatg 480  
tggaacctat ggaaaaggag tttgggcttt gcaaaactga gaacaaagcc aagtcgggca 540  
aacagaattc aaagaagctg tactgccaag aacttaaaaa ggtgattgaa gcctccgatg 600  
ttgtcctaga ggtgttgat gccagagatc ctcttggttg cagatgtcct caggtagaag 660  
aggccattgt ccagagtggg cagaaaaagc tgggtacttat attaaataaa tcagatctgg 720  
taccaaagga gaatttgag agctggctaa attatttgaa gaaagaattg ccaacagtgg 780  
tgttcagagc ctcaacaaaa ccaaaggata aagggaagat aaccaagcgt gtgaaggcaa 840  
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ttcttgaggg ttttcaggaa acttgacgca aagccattcg gggtggagta attggtttcc 960  
caaatgtggg gaaaagcagc attatcaata gcttaaaaaca agaacagatg tgtaatggtg 1020  
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gttgaagggt cgccaaaact gctgtggtct gagtggacag ggtaagcttt ctttctgtt 1380  
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gcctcattag cttactattg ccatccccct acatcttggr ctctctctcc atattttaat 1500  
gagagtattg tggtagacat gaaaagcggc ttcaatctgg aagaactgga aaagaacaat 1560  
gcacagagca taagagccat caagggccct catttgacca atagcatcct tttccagtct 1620  
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aaagaaagga agcaggagga gagggaggat gacaaagaca gtgaccagga aactgttgat 1740  
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tgcatgagct gtgtaaatgt tgtgaatatg tattatatta aaaccaggca acttggaatc 2040  
cctaaattct gtaaaaagac aattcatctc attgtgagtg gaagtagtta tctggaataa 2100  
aaaaagaaga tacctattaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 2148

<210> 248  
<211> 2225  
<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (14)

<223> n equals a,t,g, or c

<400> 248

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tatggtttgt cgtcagtccc ttccatgcgt ccatacctct ggtggkaaga agtacatcac 180
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gccgtgcaca ttccctcttg gttggttgta ttccagatt ggatacatga ttccctgat 300
tgctctcttc aaaaacttct acattcagac ctacaacaag aaaggggcct cccgaaggaa 360
agaccacctg aaggaccacc agaatgggtc catggctgct gtgaatggac acaccaacag 420
cttttcaccc ctggaataca atgtgaagcc aaggaagctg cggaaggatt gaagtcaaa 480
aattgaaacc ctccaaacca cgctatctga ttgtaagcac aatatgagtt gtgccccaat 540
gctcggttaac agctgctgta actagtctgg cctacaatag tgtgattcat gtaggacttc 600
ttcatcaat tcaaaacccc tagaaaacgt atacagatta tataagtagg gataagattt 660
ctaacatttc tgggctctct gaccctgcg ctgactgtg gaaaggaggt attattatag 720
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aatttaaaaa cactgtaatc caaacttttt tttttaactg tagatcatgc atgtgattgt 840
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agcagggccc aaagcttatt agtttaaat agggatatgt tcaagtttgt attaatgtgt 960
aatagctctg tttagaaaaa atcaaagacc atgatttatg aaactaatgt gacataattt 1020
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cagagtcctg tagatgagca atggggaact ggttgccagg gtctaaattt ggattgattt 1440
atgcactggt atctgttttg acacagattt ccttgtaaaa tgtgcctagt ttacccaaat 1500
taacaaaggg ggggaaagga ccttagaact ttttaaggta aaatcaaata tagctacagc 1560
ataagagaat cgagaaattt gatagaggta acttgtttaa tgtaaatcta atagtacttg 1620
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aattggttgt ttgatattta tgtaaatatc agtttaccat gctttaattt tgcacattcg 1920
tactataggg agcctattgg ttctctatta gtcttggtgg ttttctgttt gaaaaggagt 1980
catggcatct gtttacattt acctatcaa acctagaatg tgtatattta taaatgtatg 2040
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cattcaatag tgtgctgtca aagtgtgctt agctcacctg gatataccta cattgttaaa 2160
tgtctaaaca gtaatcatta aaacattttt gattaaaaaa aaaaaaaaaa aaaaaaaaaa 2220
aaaaa 2225
```

<210> 249

<211> 1204

<212> DNA

<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1197)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 249

```

tcgccgctgg ctccgtctgt tggggggcga acacgccgcg gtcctcgtcg tggtgagcgc 60
ascactcagg ctggtcctgg ggggtgggct gtaggggaaa gtgctaaagc cgctgagtga 120
agtaagaact ctgctagaga ggaaatggct gcttcatcat catcctcctc agctgggtggg 180
gtcagtgga gttctgtcac tggatctggt ttcaagtgtct cagaccttgc cccaccacgg 240
aaagcccttt tcacctacc caaaggagct ggagagatgt tagaagatgg ctctgagaga 300
ttctctgcg aatctgtttt tagctatcaa gtggcatcca cgcttaaaca ggtgaaacat 360
gatcagcaag ttgctcggat ggaaaaacta gctggtttgg tagaagagct ggaggctgac 420
gagtgccggg ttaagcccat cgagcagctg ctgggattca cccctcttc aggttgatac 480
tgcttgatg gtcacctctg gtgcgcagca agtgcaaagc cagtggggga ctttctcaca 540
gcttacatag ccatccagag atccacagct acgtcactga attgttaatg cacatttgta 600
cttggtttct ctgtatctat tcacaggcaa caaatactta tatgtgtgat ctttcaggga 660
atgttttggt tatttgtttt taaaagtatt gggaatcaga ttaagacaat cagtttcaga 720
gaaccaggag gtttggggtt aagagatact caaaaatttt cacaagccaa gtagggcata 780
tatcagattt ggccaactga atggcgtctg tcctgtcatc catatggtgc ctggaatat 840
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aaaa
1204

```

&lt;210&gt; 250

&lt;211&gt; 1314

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 250

```

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gcaaaattgg gtccaaaacg cctttgatgg cagctgcaac tttttccgtt ggttgaaca 120
ccttcgcttg ctcagagtca ttggaaaaac cactgaactg gctacttttt aattactatt 180
tgacaacctg ccttcagtct tcagttaata agcaccgaca tatgtttgta aaacaagttg 240
atatggatca tgtcatgaag gctaaatcca tcagagagtt tgataagcga ttcacttcag 300
tcatgtttgg ataccaaaca attgatgatt attatactga tgccagtccg agtcctagac 360
tgaagtcagt aggaattcca gtattgtgtc taaattctgt ggatgatgtt ttctcaccca 420
gtcatgctat tccaatagaa actgctaagc aaaatcctaa tgttgctttg gtccttactt 480
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atcgtgtctt caagcaattt gtgcaagcca tggttgagca tggacatgaa ctctcttaac 600
atgtagttct ttgggtgcat tttgtctgaa ccacaattgt gaaggcagct cagcttagtg 660
cacaaatttt aactgttgta tataaagcaa ataagccagc agatgggtga agaggtccag 720
aatgatatgc aaaaactact ttttagagaa acaaaacaac tttgtagcaa caaattaaat 780
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ttaaacaag tagtagttac atgaaattgc acttaaccaa aactattgtg taaaacaaat 900
tttaattcct cagggtttta atttaaacta gtattttttt agattatttg ttttaggtga 960

```

```

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ggtacattcc taagggtatt tatagttgat gataacatga aaactgaaat aagataaaat 1080
acaacgtgct aaatcctttta tgtattctaa ctttaaaaga caagtgcac aaagttagac 1140
tgacttctat atgtgctctt ttactctgat aatattaaat taggactaac ttatgtttta 1200
taatgattat aatttacatg cttattttta aaatagtata tgtggacaca tatatatcat 1260
tatattaaaa taaattctac catttttaaat tggaaaaaaa aaaaaaaaaa aaaa 1314

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<210> 251

<211> 1159

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1132)

<223> n equals a,t,g, or c

<400> 251

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ggatgggtctc gatctccagg atggtctcga tctcctgacg tcgtgatcca ccgcctcgg 180
cctcccaaaa tgctgggatt acaggtgtga gccactgtgc ccggccaaaa gaacagaaat 240
tattttatcc tgaagtaagc tgtttatatt tgggattata ctgaacctat ttgtccaata 300
acctgagttt tcaaataatt ttagttctat aagtactata attatataaa tattaatgaa 360
ttcagattag ctgaaaggaa aaaaagtaga agcctgacta cttggtgcta actactaaag 420
attttggcag aatcaatggt ggatttggtt ttccctgtccc ttcccatgc cagcccccca 480
gagtgttctg ccttgtgctg cctcccttca cckggagtgc cacaccctc tctctgccag 540
ttcagctctt cattcttcaa ggctgacct tgtctgacct ttgtgcctct aaaccctgg 600
gccccacctc tcttggttcc tatgtcaggt gatgtttgtg tttttgggta tgcccatctc 660
catagccaga ccaagcactc tggagccag ggttgggtgc ttatttatct gtttgccatg 720
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gaagttgggg ttgaggagag ccagatggct ggagtgggta tttgaaggkc tttctgtcac 1080
ctgttcagtg tggctgtccc caccctgct gacmaagact gactgaaatg tnaaataata 1140
cagaccatct caactcaga 1159

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<210> 252

<211> 2488

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature



&lt;222&gt; (64)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2334)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 252

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ccgnggacgc gtgggttgct cggcagcttg caaagcctga caacaccttg tttgtaaaca 120
gaacactttt tgatcagggtc cttgaattcc tttgtagtcc tgacgatgac tcccgcact 180
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<210> 253  
<211> 1554  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (6)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (81)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1496)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1523)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1535)  
<223> n equals a,t,g, or c

<400> 253  
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agatccctgc ttcatagatt tgcattcattc aagcatatct tgtaaaacaa acacatatta 840  
tgggactagg aaatatattat ctttccaaat ttgccataac agatttaggt ttctttcctt 900  
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taaaactaag gaaatggaat cttaaaagtc tatgacagtg taactctaca gtctcaaaa 1140

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gacctgataa attgataaga caaagatgag attattgggg ctgttcatat tatgattcag 1200
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gttgtgtctt gtgaacaagt cggtactgtg tccattattg gaatggaatt atcactactg 1320
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<210> 254

<211> 1506

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (43)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1492)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1501)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1506)

<223> n equals a,t,g, or c

<400> 254

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ncccg      1506

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&lt;210&gt; 255

&lt;211&gt; 654

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (8)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (632)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 255

```

actcacnta ttggaaaagc tggtagcgcct gcaggccccg gtccggaatt cccgggtcga 60
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cgtctgccat cggcgccatc ctgcaatcta agccacaatg gtgcgcatga atgtcctggc 180
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cgaatttgaa atcattgatg accacagagc tgggaaaatt gttgtgaacc tcacaggcag 360
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ctttttctag ggatgtaata catatattta caaataaaat gcctcatgga caaaaaaaaa 600
aaaaaaaaa aaaaaagggg gsggtctag anggtccaag cttacgtacg cgtg      654

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&lt;210&gt; 256

&lt;211&gt; 1992

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (558)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 256

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gctcgccata cacctgcgca acgccatgac caccgcgaag aaggaaacat accagtctgt 60
gtacaactgg cagtatgtgc actgcctctt cctgtggtgc cgggtcctga gcaactgcgg 120

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ccccagcgaa scctccagcc cttggtctac ccccttgccc aagtcatcat tggctgtatc 180  
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cagcaggctc acttcaacag gaagccaggg cgcagtagct ccaagcccat caacttctcc 360  
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caccggggag gatattcggc agcccgggca gtcgcagatc ggaggatgca cctgcaggat 1920  
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cccaagcgc tg 1992

<210> 257

<211> 2273

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2271)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2273)

<223> n equals a,t,g, or c

<400> 257

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cagaactgag cccagtgaga gcgcaccctg gggcagcctg gattcctggg gtgtcccccg 360
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attaaaaacc taaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaattttgcg ncn 2273

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&lt;210&gt; 258

&lt;211&gt; 1504

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 258

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tattcaggga tttttttaa aagtcaatca gaaaagggat actggagctt cttcatgtat 180
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ttcttccatt aactctggaa aaaacgttca cagttatata tatggtattt tgcaaaagga 420
ctattaatag aaccttttga gatgaattaa tgtaagaata ttttttaaat aggcttactg 480

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<210> 259

<211> 1792

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (107)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (487)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1306)

<223> n equals a,t,g, or c

<400> 259

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cggaatccc aaaggcgctg gtgagcttca aaagtgggaa ctggggcttg gccacagccg 180  
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<210> 260

<211> 2048

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (66)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (67)

<223> n equals a,t,g, or c

<400> 260

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acccttagag gagggcgtgc gggggtctgt tttgcatgcg agccaccct ctggtgctc 180
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<210> 261

<211> 1282

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1244)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1261)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1265)

<223> n equals a,t,g, or c

<400> 261

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gaagatgaac caaacaaaaa ttgtgaagcc gatcgagtgg ccattaaagc caacatagt 420
cacttgatgc ttagcagccc agagcaaatt cagaagcagt taagtgatgc aattagcatt 480
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```

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ctgatggaag aagcattgaa gtaattctga ggggttacag aggngagatt tggaagggtc 1260
nggtnttggg actagacgca gg                                     1282

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&lt;210&gt; 262

&lt;211&gt; 599

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 262

```

ggcacgagcc ccggcagagg cggargcgga gtcggcctga gaggtctctc gtcgctgcag 60
gcgcctcagc ccagccgcgt gccttggccc atggccgcct actcttaccg ccccgccct 120
ggggccggcc ctgggcctgc tgcaggcgcg gcgctgccgg accagagctt cctgtggaac 180
gttttccaga gggctgataa agacaggagt ggagtgatat cagacaccga gcttcagcaa 240
gctctctcca acggcacgtg gactcccttt aatccagtga ctgtcaggtc gatcatatcc 300
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gataagaacg agctgaagca ggccctctma gtttcggcta ccggtctctc kaccagttcc 480
acgacatcct cattcgaaag kttgacaggg argggacggg gcaratcgsc ttcgacgast 540
taatccaagg ctggcatggc ctgcagaggt ttacggatat attcaaagggt ttcggcacg 599

```

&lt;210&gt; 263

&lt;211&gt; 1261

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 263

```

ggcacgaggt tgttcggagc gggcgagcgg agttagcagg gctttactgc agagcgcgcc 60
gggcactcca gcgaccgtgg ggatcagcgt aggtgagctg tggccttttg cgaggtgctg 120
cagccatagc tacgtgcgtt cgctacgagg attgagcgtc tccaccaggt aagtgggcaa 180
gaggcggcag gaagtgggta cgcagggggc caaggcgcac agcctctaga cgactcgctt 240
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tcttctgtgc ttcaccatct acataatgaa tcccagtatg aagcagaaac aagaagaaat 360
caaagagaat ataaagaata gttctgtccc aagaagaact ctgaagatga ttcagccttc 420
tgcatctgga tctcttgttg gaagagaaaa tgagctgtcc gcaggcttgt ccaaaggaa 480
acatcggaat gaccacttaa catctacaac ttccagccct ggggttattg tcccagaatc 540
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aatccatcc tctcagtatt ggaagggaagt ggcagaaaaa cggagaaaag cgctgtatga 660
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ccgcctgaaa aaggagaata aagaactggc agaagtagca gaacatgtac agtatatggc 780
agagctaata gagagactga atggtgaacc tctggataat tttgaatcac tggataatca 840

```

```

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attaatatatt gactgttgag aattttactg ccgaagttaa cctccactag ttctttgtag 1020
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gttgaacatt gtgtataact tagaataatg aaatataagg agtatgtgta gaaaaaaaaa 1260
a                                                                                   1261

```

&lt;210&gt; 264

&lt;211&gt; 1020

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 264

```

ctgctcctgg ccaacatcca gtattttatc ttgactgtcc taaccttacc ttagatgcta 60
acagaagggt cctgctcaaa taacactggg tgctatatg atgggtaaat gtgtacatcc 120
tattccttcc tctttatctc acaatttttg tctccactaa gcaagaagta aactaacact 180
tcgtcactct aaagaaataa cttatgtaaa actcttagta accctgtttg tcttcaaatg 240
agtaaataga ccaaagtggg gggacaattt tctagtcttg tagagggaaa aacatctgag 300
tcaacatttt gaaatgcaga ggggtattgg acatgacgac atggaaaagg gcacttttaa 360
acacagctta ctcttcctca agtacagaga gtatatagt aatcaaaact aactacagcc 420
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gcataactgt attttttgtt ttagggcctt attgatgttt tgccgttcca atgtatgcat 720
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aactactcaa agacggcagt gtaaaagcaa gtcttaggaa agtcccattt tatttgtgtc 840
taacaaacat acaggaactg aaatattttt gttaaatect gggatgcacc gaagtaactt 900
aaaacaaacc gttcaacagg ttcccccaac cgcccacgcc acataaagaa cagacatatc 960
tacacttgaa aaagtcata cctgtctcag ttctgaaagt cccttaagga ttgcttgctg 1020

```

&lt;210&gt; 265

&lt;211&gt; 571

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (557)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (565)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 265

```

ctttacggca sgmgtccgcg tcgctagcta gtcgttctga agcggcggcc agagaagagt 60
caagggcacg agcatcgggc catgcctttc ttggacatcc agaaaagggt cgcccttaac 120

```

```

atagatcgat ggttgacaat ccagagtggg gaacagccct acaagatggc tggtcgatgc 180
catgcttttg aaaaagaatg gatagaatgt gcacatggaa tcggttatac tcgggcagag 240
aaagagtgca agatagaata tgatgatttc gtagagtgtt tgcttcggca gaaaacgatg 300
agacgtgcag gtaccatcag gaagcagcgg gataagctga taaaggaagg aaagtacacc 360
cctccacctc accacattgg caagggggag cctcggccct gaacagagca gctgctgatg 420
tctggaggct gattttcctg ttctctgttc tccactggaa aggttgttta cgacaaacct 480
ccttgtaaaa gtgtgtaaaa ataaaggatt gctccatcct aaaaaaaaaa aaaaaaaaaa 540
aaaatttggt ggggggnccc cgtancccat t 571

```

<210> 266

<211> 1350

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (204)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1313)

<223> n equals a,t,g, or c

<400> 266

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ggaccggggc ggggtccagtc ccgggcgggc cgtcgcggga gagaaataac atctgctttg 120
ctgccgagct cagaggagac cccagacccc tcccgcagcc agagggctgg agcctgctca 180
gaggtgcttt gaagatgccg gagncccgcc tctgctgttg gcagctgtgt tgctgggcct 240
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cggctggaac gagttcatcc tgcagcccat ccacaacctg ctcatgggtg acaccaagga 360
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ggaggccatt gacacctact gcgagcagaa ggagtgggcc atgaacgtgg gcgacaagaa 480
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catcaccatc gagatcaacc ccgactgtgc cgcctacc cagcggatgg tggatttcgc 660
tggcrtgaag gacaaggcca cccttggtgt tggagcgtcc caggacatca tccccagct 720
gaagaagaag tatgatgtgg acacactgga catggtcttc ctcgaccact ggaaggaccg 780
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tccaagctta acgtaagcgt gcatgggaag 1350

```

<210> 267

<211> 1319

222

<212> DNA  
 <213> Homo sapiens  
 <220>  
 <221> misc feature  
 <222> (7)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (61)  
 <223> n equals a,t,g, or c

<400> 267  
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 cctactgacc cggcgactga caggctccaa ctaccggga ctcagtatta gccttcgcct 180  
 cactggctcc tctgcacaag aggmggcttc cggagtagcc ctcggtgaag ccccagacca 240  
 cagctatgag tcccttcgtg tgacgtctgc gcagaaacat gttctgcatg tccagctcaa 300  
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 caacaagatt tcgagagacg ctgactgtcg ggcggtgggtg atctctgggtg caggaaaaat 420  
 gttcactgca ggtattgacc tgatggacat ggcttcggac atcctgcagc ccaaaggaga 480  
 tgatgtggcc cggatcagct ggtacctcg tgacatcatc actcgatacc aggagacctt 540  
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 cggaggtgtg gaccttgtca ccgcctgtga catccgggtac tgtgcccag atgctttctt 660  
 ccaggtgaag gaggtggacg tgggtttggc tgcgatgta ggaacactgc agcgctgcc 720  
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 gtggcgtcct ggaacatgag catgtgcag acccaagacc tcgtgaagtc ggtccaggcc 1020  
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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaagg gggggggggc 1319

<210> 268  
 <211> 3694  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (746)  
 <223> n equals a,t,g, or c

<400> 268  
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 gaggtgtggc ggagcctgtg cgcccgagc ctggcagaag aggctctgcy cagggacatc 120  
 ctgtgcaacc tgcccagcta caaggccaag atacgtgctt ttcaacatgc cttcagcact 180

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aatgactgct ccaggaatgt ctacattaag aagaatggct ttactttaca tcgaaacccc 240
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attaaggctt aaagtttgta atgatcaatg gctcataatt cattaaatct tttcatacaa 3660
ggaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa                                     3694

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<210> 269

<211> 1242

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (31)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (46)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (460)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1233)

<223> n equals a,t,g, or c

<400> 269

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ttttgtattg atatatgtac tgtgtgtgtc tgtgtgtgtg agatcaagat cagggtttga 180
ttggtgatgt actattactg ttgtccttgg tcagggacac agaggatgtt tggggtttgg 240
tggtgagaca ttatctaaca cgtgctgtgt cctttttggg tttgagcccc acaccagtga 300
gaagcatcag caccgtgaac ttgtctgaga atagcagtgt tgatcatccc ccaccgact 360
acttggaatg cttatccatg ggggcagytg ccgacaggag agcagattcg gccaggacga 420
catccacctt taaggcccca gcgtccaagc ccgagaccgn ggctcctaac gatgccaacg 480
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cgactgtgac gaatgatcgc tcggcaccca tcattcgatg agaggacagc caaggactct 600
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acgggtcggga agcttcagtg gagaggccta actctaattgt cgcctgctta agcaaatcat 720
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gtctaattgac cagctcagcc atttaaaata ttttcttcct attctgttca agaaacagta 840
aaccttggttt caatctttac tgtatttttt aaatgaattt tttccttaat aacagccaga 900
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tttattttat aaagcatgtg ctcttaatat cattatgtct aaagaagata tcacgtaagt 1020
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atgtaatttta acttaaaatg tttaagtgtg gagcttccag agrtgggagg aaacccccac 1140
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<210> 270

<211> 2057

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2053)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2054)

<223> n equals a,t,g, or c

<400> 270

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<210> 271

<211> 960

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (31)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (951)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (956)

<223> n equals a,t,g, or c

<400> 271

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<210> 272

<211> 1167

<212> DNA

<213> Homo sapiens

<400> 272

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<210> 273

<211> 2771

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (16)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (27)

<223> n equals a,t,g, or c

<220>  
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<222> (42)  
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<220>  
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<222> (64)  
<223> n equals a,t,g, or c

<220>  
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<222> (2715)  
<223> n equals a,t,g, or c

<220>  
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<222> (2717)  
<223> n equals a,t,g, or c

<400> 273  
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<210> 274

<211> 1889

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (15)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (87)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (113)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1676)

<223> n equals a,t,g, or c

<400> 274

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aaaaaaaaaa aaaaaataaa aaaaaataaa 1889

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&lt;210&gt; 275

&lt;211&gt; 604

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 275

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&lt;210&gt; 276

&lt;211&gt; 1381

<212> DNA

<213> Homo sapiens

<220>

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<222> (1348)

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<220>

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<223> n equals a,t,g, or c

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<222> (1358)

<223> n equals a,t,g, or c

<220>

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<222> (1359)

<223> n equals a,t,g, or c

<400> 276

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<210> 277

<211> 1149

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (680)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1088)

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<220>

<221> misc feature

<222> (1098)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1140)

<223> n equals a,t,g, or c

<400> 277

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<213> Homo sapiens

<400> 278  
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gcgctgctgt ccatggacgc cttggacctc accgacaagc tggtcagctt ctacctggag 300  
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cctcctcagt cggcagccaa gccaggcctg cactttatag accagcaccg ggctgcgctt 480  
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gatgagcagt accagcagt gcggccgagc ccaccaacc aagcaagatg cggaagctct 600  
tcagtttcac accagcctgg aactggacct gcaaggactt gctcctccag gccctaaggg 660  
agtcccagtc ctacctggtg gaggacctg agcgagctga ggctccttcc cagcaacact 720  
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<210> 279  
<211> 1260  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (1249)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<400> 279  
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ccacttttyt tgacagtcca gccacacctc tcttctgccc ggagaagctc cagggytgc 180  
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gatggcgccc ctactaaagc cttgggggta gtacgcgctg cagcagtctc ttccgacagt 480  
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cgggtgctgg accgggctgc ccggcagcgt cgcaccaacc ggcagctgga ggcctggag 600  
aatgacaact tccaggatga cccccacgcg ggactccctc agctcggcaa gagactgcct 660  
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gagggcccta actacctgac ggctgtgctg ggacccccat cgcggcccca gcgcccttc 840  
tgtgtgtct gtggcttccc atccccctac acctgtgtca gctgcggctg ccggtactgc 900



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tcatcaccca atgcaggggg agctcttcct ggaccaaggg aggagccgct cattcaccca 1080
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaant tngggggggg 1260

```

&lt;210&gt; 280

&lt;211&gt; 1668

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 280

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gggaactgcc aaaagtgtgc atttggttac agtggactcg actgtaagga caaatttcag 60
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gacgaagact ttcaaaatct aaaactgcgg tcgacaggct tcaccaatct tggagcagaa 240
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ttattttatt tgttattatt atttgttctt gactgttaat tgtgaatggt aatgcaataa 1620
agtgcccttg ttagatggaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 1668

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&lt;210&gt; 281

&lt;211&gt; 2328

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 281

```

ggaaagtggg tgtgtggcat ggtgtcctat ttgaacgacc tgcccagtcg gcgcatccag 60
ccacagcagg tagcagtctg gccaaccatg gtggatatca acagccccga aagcctaacc 120
gaagcatata aactccgtgc agccagatta gtagaattg ctgcaaaaaa ccttcaaaaa 180

```

```

gaagtgattc acagaaaaag caaggaggta gcttgaacc taacttctgt tgaccttggt 240
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attacacaag taaaccagcg tgtaaaggag ttactcactc tgattcgctc agatgctgtt 480
gctttgggtg atgcatttga ttttcaggat gtgacacttg gctctgtgct tggccgctat 540
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&lt;210&gt; 282

&lt;211&gt; 956

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 282

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cgagactgcg cgtgctggtg gacatggacg cgctcctggc cgacttcgag gccggcctcc 120
tgcggggctt ccgcgcgcgc ttccctgagg agccgcacgt gccgctggag carcgcgcg 180
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<210> 283

<211> 1402

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (26)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (88)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (97)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (131)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1344)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1355)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1394)

<223> n equals a,t,g, or c

<400> 283

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<210> 284

<211> 675

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (520)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (560)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (618)

<223> n equals a,t,g, or c

<400> 284

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<210> 285

<211> 1339

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1330)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1331)

<223> n equals a,t,g, or c

<400> 285

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gttagatcaa agcaaatgtg gactgaatct gcttgttgat cagtgttgaa gaaagtgcaa 1140
aaggaacttt tatatattg acagtgtagg aaattgtcta ttctgatata aattactgta 1200
gtactcttgc ttaaggcaag agtttcagat ttactgttga aataaaccca actcttcata 1260
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1320
aaaaaaaaan naaaaaaaaa 1339

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<210> 286  
<211> 1398  
<212> DNA  
<213> Homo sapiens

<400> 286  
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ggcaagtggg caccacaaag gcagtgatca ctttgcagcc tccatgggtc agcgtgttcc 180  
aagaggaaac cgtaaccttg cactgtgagg tgctccatct gcctgggagc agctcyacac 240  
agtggtttct caatggcaca gccactcaga cctcgacccc cagctacaga atcacctctg 300  
ccagtgtcaa tgacagtggg gaatacaggt gccagagagg tctctcaggg cgaagtgacc 360  
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cggaaggaga acctctggcc ttgaggtgtc atgcgtggaa ggataagctg gtgtacaatg 480  
tgctttacta tcgaaatggc aaagccttta agtttttcca ctggaattct aacctcacca 540  
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agcagcggtc cagtgggtgg ccacgatct ggaccgtccc ctgcccactt gctccccgtg 1260  
agcactgcgt acaaacatcc aaaagttcaa caacaccaga actgtgtgtc tcatgggatg 1320  
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aaaaaaaaaa aaaaaaaaaa 1398

<210> 287  
<211> 926  
<212> DNA  
<213> Homo sapiens

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<222> (20)  
<223> n equals a,t,g, or c

<220>  
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<222> (22)  
<223> n equals a,t,g, or c

<220>  
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<222> (896)  
<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (917)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 287

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&lt;210&gt; 288

&lt;211&gt; 3094

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 288

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&lt;210&gt; 289

&lt;211&gt; 1983

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 289

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<210> 290

<211> 1298

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (1224)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1231)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1242)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1262)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1285)

<223> n equals a,t,g, or c

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&lt;210&gt; 291

&lt;211&gt; 2459

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (4)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1604)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1605)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

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 <222> (2374)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (2392)  
 <223> n equals a,t,g, or c

<400> 291  
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<210> 292  
 <211> 570  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (567)  
 <223> n equals a,t,g, or c

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<210> 293  
 <211> 2468  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (2076)  
 <223> n equals a,t,g, or c

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2468

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<210> 294

<211> 1080

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1038)

<223> n equals a,t,g, or c

<400> 294

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caggccagca gacagtgggt tttgctggac acagtgggga tgtgatgtcc ctgtccctgg 180
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ccccactgtg gagataagaa ggggatggaa tgggggaaga ggaggagcag gaggccctca 840

```

```

tccttctgct gccctggggt tggggcctca cccctctgga gggccgagag caggaggtgg 900
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tttttccata aaggagccaa ttccaactct gwaaaaaaaa aaaaaaaaaa acttcgrggg 1020
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```

<210> 295

<211> 2695

<212> DNA

<213> Homo sapiens

<400> 295

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tccatatata cagaaattag acaaataata agtcttttagt tcaacttaag catatctcaa 180
atgactttct taaattttaa gttgatcatg ataggatcat aaaagacaga aaagacttaa 240
gtaatcttgt aatgacaatt atttccattt ttgctgaact aaaaatattt aacttcataa 300
atatgttact acagcttcca gatttaaaga aaaaaagttt cccccactct caattaaaag 360
ttagaaccct ccacttttaa aattatacaa atatttcttt ttacattac acagaagcct 420
tctgtacctt ttacgaatt tctgtcttca taatataagt gaaaatactg tcatttcaat 480
tttctgcttt aaattgtttt taataagcat yccaaagtga tacagactta agcttttaat 540
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ttctaactac aaaaaaaaaa aagtcgacac cgccgggaat ttaggtgtag tagtcccccg 2640
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<210> 296

<211> 1394

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1238)

<223> n equals a,t,g, or c

<400> 296

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ggacaagttc attgaagact atctcttgcc agacacgtgt ttccgcatgc aaatcaacca 180
tgccattgac atcatctgtg gggtcctgaa ggaaagggtg ttccgaggta gctcctaccc 240
tgtgtgtgtg tccaagggtg taaagggtgg ctctcagggc aagggcacca ccctcagagg 300
ccgactctgac gctgacctgg ttgtcttcct cagtcctctc accacttttc aggatcagtt 360
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gagagcattt tccgtgaagt ttgaggtcca ggctccacgc tggggcaacc cccgtgcgct 480
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1394

<210> 297

<211> 998

<212> DNA

<213> Homo sapiens

<400> 297

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acattccttg tgacgactgc gcatgctcgg aaaggggacg caatcragat cccaaacg 180

```

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gtacagacca aaccgcagtc cacgttacgg atcggttac tccgcggagt tggcctcatt 240
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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 998

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&lt;210&gt; 298

&lt;211&gt; 1666

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 298

```

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cccaaaagat ctgcaaaatc atggaccagg ccataacggt gggggctcca gtgattgggc 360
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cattgtaaac aaatcaaagg aaaagaaacc aagaactgaa ttactgtctg cccattcaca 1560
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&lt;210&gt; 299



250

<211> 2444  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (4)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (402)  
<223> n equals a,t,g, or c

<400> 299  
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251

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&lt;210&gt; 300

&lt;211&gt; 1026

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1026)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 300

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aaaaan 1026

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&lt;210&gt; 301

&lt;211&gt; 830

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 301

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agcccagcct gttgccatgt ccctctcagc agacaagtgc caggtcctcc tggcagaact 480
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<210> 302

<211> 3300

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1158)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (3232)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (3280)

<223> n equals a,t,g, or c

<400> 302

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<210> 303

<211> 475

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (444)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (451)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (454)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (470)

<223> n equals a,t,g, or c

<400> 303

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aaaaaaaaat cctgtcttgt tcataaattg acaatgtcaa taaattgaaa tatggttcac 420
tgttaaaaaa aaaaaaaaaa aaangggggg nccnttttaa agaattccaan ttac 475
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<210> 304

<211> 2902

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2888)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2891)

<223> n equals a,t,g, or c

<400> 304

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&lt;210&gt; 305

&lt;211&gt; 1553

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 305

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<210> 306

<211> 1987

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (731)

<223> n equals a,t,g, or c

<400> 306

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1987

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<210> 307

<211> 785

<212> DNA

<213> Homo sapiens

<400> 307

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785

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<210> 308

<211> 2178

<212> DNA

<213> Homo sapiens

<400> 308

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agttaatgtg ttccaggcat tcttctaagt ggtttacatg cactgtctca tttaatctga 2040
gataaaggat acttaagccc aaactatata taaacccaaa tctcacttgg ctggaaacat 2100
caatcttaac catttattca gaaccattaa accaatgatt ccaaaaaaaaa aaaaaaaaaa 2160
aaaaaaaaaa aactcgta                                     2178

```

&lt;210&gt; 309

&lt;211&gt; 875

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 309

```

caagctcctg tggccacctg tgtcccagca gcagtgagtg gagctgctca gggtgccctc 60
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gtaacttata tggaaggga agcacatgcc ttacgggca gggatgttc cttttcttct 180
cggggtgttg acttgcatc ctgtgtgaac tgttccctct gccatgttta ccgtgtgatg 240
ttctgtagtt gaaaatgtta gttgtctgct ggcacagaat ttatctcgtt ctttctctc 300
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tggggtacat acattcgtaa aytcttgggc agtggtgagc acgagatgac tttctgcagc 420
gtttatcact gttgggtgga gtcacgtccc ttccctccac cgaagtcac aaccagatag 480
ggaagggaat gatgaggccc agaaaacgag ttcaaactct aggtcttgta cacgtatgta 540
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tacctctccc aggtcctctc acttgctctc cccgcgtcct ggttgcatgg ccgcacctgt 720
gtgtgtgcag aggtctgtgt cccatcctct gcacctcctt tccggggggc tggggagccc 780
cacgtgttgc caagatcttg gtgcaataaa atactccgtt tttgtgaaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa                                     875

```

&lt;210&gt; 310

&lt;211&gt; 756

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

<222> (613)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (638)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (684)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (756)

<223> n equals a,t,g, or c

<400> 310

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cacgcgtccg ggcccgtggc gccgacagga tgggcaagtg tcgtggactt cgtactgcta 120
ggaagctccg tagtcaccga cgagaccaga agtggcatga taaacagtat aagaaagctc 180
atttgggcac agccctaaag gccaacctt ttggaggtgc ttctcatgca aaaggaatcg 240
tgctggaaaa agtaggagtt gaagccaaac agccaaattc tgccattagg aagtgtgtaa 300
gggtccagct gatcaagaat ggcaagaaaa tcacagcctt tgtacccaat gacggttgct 360
tgaactttat tgaggaaaaat gatgaagttc tggttgctgg atttggtcgc aaagggtcatg 420
ctgttggtga tattccttga gtccgcttta aggttgctcaa agtagccaat gtttctcttt 480
tggccctata caaaggcaag aaggaaagac caagatcata aatattaatg gtgaaaacac 540
tgtagtaata aattttcata tgccaaaaaa aaaaaaaaaa aaaaaaaagg gsgggcscyc 600
taaaagatcc tcnaagggcc aagcttacgc tgcatgcnac tctactctct cctatatgaa 660
tctattataa ctagcctggc ctcnttacac tctgatggaa ttctactgga ttttaagact 720
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```

<210> 311

<211> 851

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (834)

<223> n equals a,t,g, or c

<400> 311

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ccaggagcac agctgtgatg aacagtactt gtgtcagttc tgtgaacatg aaactaatga 120
tccagaagac ttgcatagcc atgtggtaaa tgagcatgca tgtaaattaa tagagttaag 180
tgataagtat aacaatggtg aacatggaca gtatagcctc ttaagcaaaa ttacctttga 240
caaatgtaaa aacttctttg tatgtcaagt atgtggtttt cggagtagac ttcacacaaa 300
tgtaaacagg catgttgcta ttgaacatac aaaaattttt cctcatgttt gtgatgactg 360
tgggaaaaggc ttttcaagta tgctagaata ttgcaagcat ttaaattcac atttatctga 420

```

```
agggatttat ttatgtcaat attgtgaata ttcaacagga caaattgaag atcttaaaat 480
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gtttggaaat gaaaggggaat taataagtca ccttccagtc catgagacaa cttgattatt 600
ctctttaact tacagaatgt tagtttaaaa taataaattc atcctttttt tggagatgat 660
taaattggatg attgtaaaca caacttatga aatctgcctt taacaagtaa ctttttttaa 720
ttataaaatt ttattggcat tgctccattt tctgtatata aatatactt taatgtggta 780
ttttcaaaaa aaaaaaaaaa aaaaaaatcc acgcggccgc gaattcccgc gtcnaacaag 840
ctcactaatc c 851
```

<210> 312

<211> 1335

<212> DNA

<213> Homo sapiens

<400> 312

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gaacctagcc agcaaaggag cggcgaggat cctcctcgtc gtcgtcgtcc tctagctcct 120
cctcctcttc atcatcgtcg tcgtcgtcct cctcctcctc tggctccagt tctagtact 180
cagagggctc tagccttctc gtgcaacctg aggtggcact gaagagggtc cccagcccca 240
ccccagcccc aaaggaggct gttcgagagg gacgtcctcc ggagccaacc ccagccaaac 300
ggaagaggcg ctctagcagt tccagttcca gctcctcctc ttcattctcc tctcctcct 360
cctcctcctc ttcttctcct tctcttctct cttcttcttc ttctcctca tcttctcct 420
cctcgtcgtc ttctcctcct tccctgcta agcctggccc tcaggcttgc ccaaacctgc 480
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ccaggggtga ttgtgatgtt ggttgggact ggaggttgta taagggtgtt ttggaaggaa 1140
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cccaactttt catgtttctt aaaggcattt tggtttttta aaatctgtac agcaagagca 1260
actttttctg tcaataaaaa atgagaaatg caggaaaaaa aaaaaaaaaa aaaaaaaaaa 1320
aaaaaaaaaa aaaaaa 1335
```

<210> 313

<211> 516

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (505)

<223> n equals a,t,g, or c

<400> 313

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tcgacccacg cgtccgaaca tggcgccggg agtgtccgcg gtggtggcgg tgcaagagag 60
```

```

ctgagggagg cgcgagggcg cggagttcca ggtcgagcag ttaggccgcg agcgactgcg 120
gcgcccagcc gatgagtaac ccgaagcccc tagaggagtg gtcacctgcc tgagggcact 180
tctgtcccac cagcatcaga ccaggccgca ccgagtcccc ggcaccatgt ttgggaagag 240
gaagaagcgg gtggagatct ccgcccgtc caacttcgag caccgcgtgc acacgggctt 300
cgaccagcac gagcagaagt tcacggggct gccccgccag tggcagagcc tgatcgasga 360
gtcggctcgc cgccccaaag ccctcgtcga ccccgctgc atcacctcca tccagcccgg 420
ggcccccaag accatcgtgc ggggcagcaa argtgccaaa gatggggccc tcacgctgct 480
gctggacgag tttgagaaca tgtnngtgac acgctt 516

```

<210> 314

<211> 1833

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (625)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1761)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1766)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1792)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1806)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1827)

<223> n equals a,t,g, or c

<400> 314

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cggccgcggg ctctgctca acgctagtgc cgtcagccgc ctgcgcgcct acctgctgcc 120
agcgcgcgca gctccaggaa atgctagtga gtcggaggaa gaccgcagcg ccggcagtggt 180
ggagagcccc tccgtctcca gcacgcaccg ggtgtctgat cccaagttcc accccctcca 240
ttcaaagata atcatcatca agaaagggca tgctaaagac agccagcgct acaaagttga 300
ctacgagtct cagagcacag ataccagaa cttctcctcc gagtccaagc gggagacaga 360

```

```

atatggtccc tgccgtagag aaatggaaga cactactgaat cacctgaagt tcctcaatgt 420
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gcagtgctgc ccttccaaag gcaggaagcg gggcttctgc tgggtgtgtg ataagtatgg 540
gcagcctctc ccaggtctaca ccaccaaggg gaaggaggac gtgactgct acagcatgca 600
gagcaagtag acgcctgccg caagnttaat gtggagctca aatatgcctt attttgaca 660
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ggtgaactga ttttttttaa accaaagttt agaaagaggt ttttgaaatg cctatggttt 780
ctttgaatgg taaacttgag catcttttca ctttccagta gtcagcaaag agcagtttga 840
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ggtgcntttt tgataccac tttgggncct gga 1833

```

&lt;210&gt; 315

&lt;211&gt; 1354

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 315

```

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ctgaagccga aaccagctag actttcctcc tcccgcctg cctgtagcgg cgttgttgcc 180
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tgacagagcat ggactcgtcc cacgtctctt tgggtgcagct caccctgcgg tctgagggtc 360
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ataccttggc gctagtattt gaagcaccaa accaggagaa agtttcagac tatgaaatga 540
agttgatgga ttttagatgtt gaacaacttg gaattccaga acaggagtac agctgtgtag 600
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atggaaacat taaattgtca cagacaagta atgtcgataa agaggaggaa gctgttacca 780
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atgaagaagg atcttaggca ttcttaaaat tcaagaaaat aaaactaagc tctttgagaa 1020
ctgcttctaa gatgccagca tatactgaag tcttttctgt caccaaattt gtacctctaa 1080
gtacatatgt agatatgttt ttctgtaaat aacctatttt tttctctatt ctctgcaatt 1140

```

```

tgtttaaaga ataaagtcca aagtcagatc tggctctagtt aacctagaag tattttttgtc 1200
tcttagaaat acttgtgatt ttataatac aaaagggtct tgactctaaa tgcagtttta 1260
agaattgttt ttgaatttaa ataaagttac ttgaatttca aaaaaaaaaa aaaaaaaaaa 1320
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1354

```

<210> 316

<211> 2421

<212> DNA

<213> Homo sapiens

<400> 316

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aaagatgagc ttgatgaact caaagaggcc ttgcaaaag ttgatctcaa cagcaacgga 180
ttcatttgtg actatgaact tcatgagctc ttcaaggaa ctaatatgcc attaccagga 240
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gacatcattg tgaactgggt gaacagaacg ttgagtgaag ctggaaaatc aacttccatt 1740
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ccttgacatt tccattgct gtatgttatt tcttgctctg ktawcytttg ccctcttaga 2340
atgtccctct cttgggactt gcttagatga tgggatatga atattattag acagtaattt 2400

```

tgctttccat ccagtatgct a

2421

&lt;210&gt; 317

&lt;211&gt; 1092

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 317

```
aattcggcac agattgatat tgtgtactat aatagagact cttaaaggag aatcttaaaa 60
aaaaaaaaac gtttctcact gtcttaata gaatttttaa atagtatata ttcagtggca 120
ttttggagaa caaagtgaat ttacttcgac ttcttaaatt tttgtaaaag actataagtt 180
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ggcctttgaa ctttcatagg aaaaatgacc caacatttct tagcatgagc tacctcatct 540
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aaaaaaaaaa ac 1092
```

&lt;210&gt; 318

&lt;211&gt; 1380

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 318

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aatccttatg catcatctaa agcagctgct gaatgttttg tacagtctta ctgggaacaa 120
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tcagttgtcc agcttgccaa agaactaata caactgatca aagagacca ttcagagtct 420
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gcattagaac cctttccggt ataataacca tttatatagt cgagacagtt gtcaaagaag 660
aaagttatcc tacctcgcca agtggatga aattaagtga ccaaatgaag tgactcttt 720
tcttttgtaa ttagattcat gactttctgt ataaaattca aatgcagaat gcctcaatct 780
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```

```

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```

&lt;210&gt; 319

&lt;211&gt; 2612

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 319

```

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```



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```

<210> 320

<211> 943

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (52)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (54)

<223> n equals a,t,g, or c

<400> 320

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gacttgaatt ccttcttttg gaccaagtta ataaaagacc aagaaactcc tgattaaact 360
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gcaaattgtg caatggaata aaatccacac tttagattct tgcaactgta tcatatgtaa 660
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tcagccccca cacgctgctg gggaatgtgg atgttctagc tctgagatgt taactgrgaa 840
aagagaagtc aaacaaagcc gatacgtgca gccctgtcta cagaatcctt cattatccag 900
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```

<210> 321

<211> 2959

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2948)

<223> n equals a,t,g, or c

<220>

&lt;221&gt; misc feature

&lt;222&gt; (2956)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 321

```

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atgccatcat gcaagttgca gtttgtggat cactgattgg ctggagggaat gttacacggc 120
tgctggtgtt ttccacagat gccgggtttc actttgctgg agatgggaaa cttggtggca 180
ttgttttacc aaatgatgga caatgtcacc tggaaaataa tatgtacaca atgagccatt 240
attatgatta tccttctatt gtcacacctg tccagaaact gagtgaaaat aatattcaga 300
caatttttgc agttactgaa gaatttcagc ctgtttacaa ggagctgaaa aacttgatcc 360
ctaagtcagc agtaggaaca ttatctgcma attctagcaa tgtaattcag ttgatcattg 420
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tcttgactct gatgtatttt awcaggttgt gtgcatgaaa tttttataga taaagragtt 2940
gaggaaanaa aaaaaanaa                               2959

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<210> 322

<211> 802

<212> DNA

<213> Homo sapiens

<400> 322

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gtggtgctcg gcgacggcgt gcagctcccc cccggggact acagcacgac ccccgcgggc 180
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accagccatc gtgtggagca ctaccaagg gcccctcagg gccttcctgg gaggagtccc 480
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ccagcccttt ctccctcact cagggcacct gcccctcct cttcgtgaac accagcagat 600
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cacaccctcg cwgcyggggg sgcaaccacc ccttccttag gttgatgtgc ttgggaaagc 720
tccttcccc tccttcccc aagagaggaa taaaagccmc ctcgcccta gggccaaraa 780
aaaaaaaaa aaaaaaaaaa aa                               802

```

<210> 323

<211> 1724

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1590)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1650)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1701)

<223> n equals a,t,g, or c

<400> 323

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cgcgtgccgc agaaagatct cagagtaaag aagaacttaa agaaattcag atatgtgaag 180
ttgatttcca tggaaacctc gtcacacctc gatgacagtt gtgacagctt tgcttctgat 240

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```

aattttgcaa acacgaggct gcagtcagtt cgggaaggct gtaggacccg cagccagtgc 300
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accaacaaaa aagcagagtc ccgccagccc tcagagaatt ctgtgactga ttccaactcc 420
gattcagaag atgaaagtgg aatgaatttt ttggagaaaa gggctttaaa tataaagcaa 480
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```

<210> 324

<211> 2261

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1098)

<223> n equals a,t,g, or c

<400> 324

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gaatgcgttg aggaagcata aagacttggt gggtaaaaaga tacattgaac tcttcaggag 120
cacagcagct gaagttcagc aggtgctgaa tcgattctcc tcggccccctc tcattccact 180
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```

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```

&lt;210&gt; 325

&lt;211&gt; 1213

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1213)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 325

```

tggacgcgtg ggtcgaccca cgcgtccggt caaaaytaac cccctaataa aattaattaa 60
ccactcattc atcgacctcc ccaccccatc caacatctcc gcatgatgaa acttcggctc 120
actccttggc gcctgcctga tcctccaaat caccacagga ctattcctag ccatgcacta 180
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<210> 326

<211> 2764

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (372)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2128)

<223> n equals a,t,g, or c

<400> 326

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gcgcccccct ccctcctcct ctggtctctc ctccctctcc tcccagctca gcgtggctac 360
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gggc 2764
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<210> 327

<211> 1764

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1398)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1758)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1759)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1762)

<223> n equals a,t,g, or c

<400> 327

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gctgtgaccg ctgtgaagaa tggtttcatt gcgatttgtt gggcatttct gaggtctcag 180
ggaggctttt ggaaaggaat ggggaagact atatctgccc aaactgcacc attctgcaag 240
tgcaggatga gactcattca gaaacggcag atcagcagga agctaaatgg agacctggag 300
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atgctgatgg caccgattgt acaagtatag gaacaataga gcagaagtct agcgaagacc 360
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tcttccagcc tgtgatagag gcgcctggtg cctcaaaatg tattggcccc ggggtgctgtc 480
acgtggcgca cccgactcgg tgtactgcag taatgactgt atcctcaaac acgccgcagc 540
gacaatgaag tttctaagct caggtaaaga acagaagcca aagcctaaag aaaagatgaa 600
gatgaagcca gagaagccca gtcttccgaa atgcggtgct caggcaggta ttaaaatctc 660
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ctttaaaaaa aaaaaaannt cnaa 1764

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<210> 328

<211> 571

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (535)

<223> n equals a,t,g, or c

<400> 328

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ggccgcatca aggtggtctt tactccgagc atctgtaaag tgacctgcac caagggcagc 180
tgtcagaaca gctgtgagaa ggggaacacc accactctca ttagtgagaa tggatcatgt 240
gccgacaccc tgacggccac gaacttccga gtggtaatth gccatcttcc atgtatgaat 300
ggtggccagt gcagttcaag ggacaaatgt cagtgccttc caaatttcac aggaaaactt 360
tgtcagatcc cagtccatgg tgccagcgtg cstaaactth atcagcatte ccagcagcca 420
ggcaaggcat tggggacgca tgtcatccat tcaacacata ccttgccctt gaccgtgact 480
agccagcagg agtcaaagtg aaatttcctc cttaacatag tcaatatcca tgtgnaacat 540

```



cctcctgaag cttccgtcca gatacatcag g

571

&lt;210&gt; 329

&lt;211&gt; 473

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (37)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (449)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (467)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 329

cacgtagtaa tctttaaata taaatagcca cgtgtgnact actatcatat gggacagaac 60  
agttccagac cacattattg ataagatgtg ttaaaataaa taagatcttt ctgtgaactt 120  
ttgggaacca aatgggtttt ggcatgattt cccagctcat tatatattga cacagaattt 180  
tttcagaatg gcatttacta gtaccccaga aatttagcaa agtatagtta ggtacttatt 240  
gtaaaaatata ttgcatattt gatttaaggt ttgttatgaa cacactaatc tgatatttta 300  
tatttaaacc attttcaatk ctgtaagact cagtaagagc tatttaatta tactgwaaca 360  
aagaaaatct ataaataaat agcacaaata ggcacatgcg ggtgtataat actgaagtgg 420  
tagtttttta tttccgaaga gaataagcnt ttcaggccca ttagaancac aga 473

&lt;210&gt; 330

&lt;211&gt; 1335

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (865)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1004)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1156)

&lt;223&gt; n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1301)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1328)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1333)  
<223> n equals a,t,g, or c

<400> 330  
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aggatgagca agctgcccag ggagctgacc cgagacttgg agcgcagctg cctgccgtgg 180  
cctccctggg ctctcactg tcccacagcc agagcctctc ctgcacctc cttccgccgc 240  
ctgagaagcg aagggccatc tctgatgtcc gccgcacctt ctgtctcttc gtcaccttcg 300  
acctgctctt catctccctg ctctggatca tcgaactgaa taccaacaca ggcatccgta 360  
agaacttga gcaggagatc atccagtaca accttaaaac ttcttcttc gacatctttg 420  
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ctggtgggtg attgcggtca cgacgctggt gtccagtga ttcctcattg tcaaggteat 540  
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cctcgcttg ttggagacct ggttccttga cttcaaagtc ctacccagc aagctgaaga 660  
ggagcgatgg tatcttgccg ccaggttgc tgttgccgt ggaccctgc tgttctccg 720  
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caggggaagg aggccacgac agtgntggac cagatcttgg ccaggaaga gaactggaag 900  
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cagcgagtgg aagacaacac cctcatctcc tatgacgtgt ctgcaagggg ctgcggggcg 1140  
cgtkgtcttc cccaangac ttcgtgaatg tccggcgcat tgarcggcgc agggaccgat 1200  
acttgttcat cagggatcgc caccttcaca cagtgccaa ccccgacgc acaaatatgt 1260  
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ttgcacntt gtntg 1335

<210> 331  
<211> 1046  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (982)  
<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (997)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 331

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ggtaaaacag agagcaacat gccccagtc ctctctcttg ccagttcttg tggcagcccc 60
attggccttg agacatggtt ttttgtggtt gcagctgcag ctgtccccc gtcttttaac 120
tcgacatcaa aagcctctct cctgccagtg ccataggttt gttagagcta ctgttttgta 180
acagctgctc aggtgtcccc aaactccttg agttttccac cctgagctgt taaaaacctg 240
ccctgcctgt caccatttct tgtgccacca gcccaccccc tgccctccact ctctccctg 300
ccaccttctg tccctgccat aggaatatgg ggacaccgtg tacaccattg aagttccctt 360
tcacggcaag acgtttatcc tgaagacctt cctgccctgt cctgcggagc tcgtgtacca 420
ggaggtgatc ctgcagccc agaggatggt gctgtggaac aagacagtga ctgcctgcca 480
gatcctgcag cgagtggaa acaacacct catctcctat gacgtgtctg caggggctgc 540
ggcgcgctg gtctcccaa gggacttcgt gaatgtccgg cgcattgagc ggcgcaggga 600
ccgatacttg tcatcaggga tcgccacct acacagtgc aagccccga cgcacaaata 660
tgtccgggga gagaatggcc ctgggggctt catcgtgctc aagtcggcca gtaacccccg 720
tgtttgcacc tttgtctgga ttcttaatac agatctcaag ggccgcctgc cccgtacct 780
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tcgccaccac ttccagagcc agaaagggtg ccagttgggc tcgcactgcc cacatgggac 960
ctggccccag gcwgtmamcc tncamcgagc cacgcantcc tgggagttga tgaatgaaca 1020
gstttgggtg gacattgat tcgggg                                     1046

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&lt;210&gt; 332

&lt;211&gt; 1311

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1280)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 332

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gcacgaatcg ccgcagcccc cagccttgcg cgtcgtcgt acctcctcgg acaggtgaga 120
agcagcccag aaattttatg aataagcatc agaagccagt gctaacaggc cagcggttca 180
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tccaggggct taatgaggct ggtgatgacc ttgaagctgt agccaaatct ctggactcta 300
caggctcaag attagattat cgtcgtatg cagacacact ctctgatatc ctggtggctg 360
gcagtatgct tgcccctgga ggaacgcgca tagatgatgg tgacaagacc aagatgacca 420
accactgtgt gttttcagca aatgaagatc atgaaacat ccgaaactat gtcagggtct 480
tcaataaaact catcaggaga tataagtatt tggagaaggc atttgaagat gaaatgaaaa 540
agcttctcct ctctcttaaa gccttttccg aaacagagca gacaaagtg gcgatgctgt 600
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cagagcaggc tctgaagcac ctgaagcaat atgctcccct gctggccgtg ttcagctccc 1140  
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atctcatgaa agcctttcag aagattgtgc ttccttatac catttcagta ttgcttcttc 1260  
gctcagaaca tcagctttan tcgtgccgat tcggcacgag cggcacgagc c 1311

<210> 333

<211> 1444

<212> DNA

<213> Homo sapiens

<400> 333

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ccacaggccc cttccccagc ctccagttcac agctgccctg ttgcaggag gcggtggccc 180  
ttctgttgct agaccgagcc tgtgggatat accaaggcag aggagcccat agccatgagg 240  
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ccaacgccgc ccgacaacat ccaagtgcag gaaaacttca atatctctcg gatctatggg 360  
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aagg 1444

<210> 334

<211> 1030

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (59)

<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (989)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1006)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1023)  
<223> n equals a,t,g, or c

<400> 334  
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gctgtcctga ccacacccac tccttgctgc agccrtgkag tcttccactt tcgccttggg 180  
gcctgtcttc gccacactga gcacccctcca gagcctcgtg ccagctgctg gtgcagcctc 240  
tcctgttgcc atcagtggcc agcacctgtg ctacagccat gtcactcctg gcgaccctgg 300  
ggctggagct ggacagggcc ctgctcccag ctagtgggct gggatggctc gtagactatg 360  
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agggcgggct tccagtgggg ggagagcccc tggcaggtga tggcttctct gactggatga 480  
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tcccccaacc tcccccaacc ccacctgacc tggaagctat ggcctccctc ctcaagaagg 600  
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cgccactacc accaccacca ctaccaccag cccctccct cccctgtcc ctccctcct 720  
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ggggaccgca agcaaaaagaa gagagaccag aacaagtcgg cgytytgag gtaccgccag 960  
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<210> 335  
<211> 2127  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (72)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2098)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

&lt;222&gt; (2114)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2117)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 335

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ggatctgagg aaagggaggg cttttctgat ctctcccaat tagaggatta ggcaattggc 60
agcgcagtgc gntaactctg ggcggggctg ggctccaggg ctggacagca cagtccctct 120
gaactgcaca gagacctcgc agccccgaga actgtcgcgc ttccacgatg tggctccgtg 180
cctttatcct ggccactctc tctgcttccg cggcttgggc agggcatccg tcctcgccac 240
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cacagcctgt ggccattttc ctgggaatcc cttttgcca gcccctctt ggaccctga 360
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ctcctatgtg caccaagat cccaaggcgg ggcagttact ctacagagta ttacaaaacc 480
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tgggtggtgac cattcaatat cgcttgggca tctggggatt cttcagcaca ggggatgaac 720
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gggtggtggg ggcaggggac agaggccatg aaggagcaag ttttgatttt gtgacctcag 2040
ctttgggaat aaaggatctt ttgaaggcca aaaaaaaaaa aaaagggcgc ctttttangg 2100
gttcccaatt tacnaanggg tgcttg 2127
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&lt;210&gt; 336

&lt;211&gt; 847

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
<221> misc feature  
<222> (291)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (334)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (829)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (847)  
<223> n equals a,t,g, or c

<400> 336  
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tccccactcc ttctctcacg ccaagctctg actttccgtg ctccacgac ccgcggctcc 180  
ccctccgcac gtctttccct tgtcgccctc cccagtcattg acccgggctg gaccttcagg 240  
gaccgcggcc cgtatcgcca tccctgcccc gcgaacactg cgcgtttcgg ntttcgcgcg 300  
ctcgggtccc gtccccagag gtagcccgcc cggttccaac ttcgggcaaa attttcattg 360  
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tccaccgagc cctgcgcgca gctgtccatc tcctccatcg gcgtagtggg caccgccgag 480  
gacaaccgca gccacagcgc ccacttcttt gaggtttctc ccaaggagct agccctgggc 540  
caggaccgga tacttatccg ctttttcccc ttggagtcct ggcagattgg caagataggg 600  
acggtcattg cttttttatg attgggcacg gagggatcca gggcatctgt gaactggctg 660  
cttcttccag agagatctct tggcagagtg agggcctgga gataaccagc tttggattat 720  
cccgcatgca acattctctg gatcacataa tcctcttctt catcctcata tgaaataaat 780  
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ttggccn 847

<210> 337  
<211> 702  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (21)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (150)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (669)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (679)  
<223> n equals a,t,g, or c

<400> 337  
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aaccgcgcaaa gagtaagacg gcagcggcan cctctgaaaa gaatcggggc ccaagaaaag 180  
gcggtcgtgt tatcgctccc argaaggcgc gcgtcgtgca gcagcaaaag ctcaagaaga 240  
acctagaagt cggaatcccg aagaagatcg aacatgacgt ggtgatgaaa gccagcagca 300  
gcctgcccaa gaagctggca ctgctgaagg cccagccaa gaagaaagg gcagctgccg 360  
ccacctctc caagacacct tcctgaggac gctggcccca gtgcaggcca acatcccacc 420  
ccctacctcc atatgggacc ttgcaagtca tcccacaggc tgcactgtca ggaagaggac 480  
cctgtccccc agcactgggc ttcacctaga acttcagtgg gggccaagg tgctgagaac 540  
ccagcaatga ccaggaagat acagtcacta acttcactgt tccccgtgcc cttcccagg 600  
tcctgcctcc acaggtttaa cccagaacaa taaacctggc tttgtcaama aaaaaaaaaa 660  
agggccggnc gtttttagang atccagctta cgtaccgtgc tt 702

<210> 338  
<211> 875  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (791)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (813)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (830)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (861)  
<223> n equals a,t,g, or c

<400> 338



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cacacacaaa gataacagta cctagagaga gagtgtgtgt gagtgtgcgt gtctctgtgt 180
gtgcacgtgc acgctcatgg ccaaagtgc gcaactctaca taaaggaggc aggagttcct 240
ataggctatt taatgtaaga gaaactatct ttctcctgtt ccagctgtat cagatactcg 300
ttccgcaaca cagaaatgac tcagaatctc agacaaaatg tattatttgt tcaattttaa 360
ttttgctact acattcataa ctcttaaatt gttaggctgt ttcatttaca tcaaagttat 420
ctcacaaaag agaaggcagg aaacgttttg tgagtgccta ttctatgtca aacactgtgt 480
tggcaccata ttttacaagt ttttttcctc ttctcacagt gatcttgtga gttagttact 540
tatattttta ttagaactca ttattctggg taccctccaa tgagaattag agagggttaa 600
taccttttcc tagattccca cagcaggaag gtgggcatag ctgttttgtc tgacaccaga 660
acccatctca ccacactgct ttacagtctt cctgaaggga cattttgagg tggggggggg 720
ccttcaaagc tcagaggact gggtttkgaa tgggtttaat ttttgcaagg gatccatgtc 780
catgccaggg ngtttacaat tctttaactt ccntcccaa ttcgtgtgn ccattaggga 840
catttggtt acatccgggc nggggagggc caggg 875
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<210> 339

<211> 1448

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1427)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1432)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1440)

<223> n equals a,t,g, or c

<400> 339

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ccaagttccg gccagttcga cctcgaggat ccagaggtgg agacggtact acctcccagc 120
tctgttttcc atccccttca ggtccttcct cgggaggcgg cgaaggcggc ccacctgctg 180
cgtgatcctt yatgcccggc ccctgcccct ccctccgggt ggaacttccc cctcaccgcc 240
agacttaagc tgaggatcgt tggatctctg gcgggggtgca gaactgagcc caggccacag 300
taccctattc acgctctgtg ctgtgtccaa gggggcaatg gcggcttcct gtgttctact 360
gcacactggg cagaagatgc ctctgattgg tctgggtacc tggaagagtg agcctgggtca 420
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tgctgatggg actatatgct acgactccac ccactacaag gagacttgga aggctctgga 780
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```

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cagcttcttg gcctcccttc cagctctgca gctaatgagg tcctgccaca acggaaaagag 1380
ggagttaata aagccattgg agcatccaaa aaaaaaaaaa aaaaanayc tngsggccgn 1440
caagggaa 1448

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<210> 340

<211> 843

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (812)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (822)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (829)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (838)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (841)

<223> n equals a,t,g, or c

<400> 340

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gctgatctcc tgctgatgt ttctgtctca gagccaaggc caagaggccc agacagagtt 180
gccccaggcc cggtacagct gccacagaag caccaatgcc tatcgctcct actgctacta 240
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gggcaacctg gtgtctgtgc tcaccaggc cgagggtgcc tttgtggcct cactgattaa 360
ggagagtggc actgatgact tcaatgtctg gattggcctc catgacccca aaaagaaccg 420
ccgctggcac tggagcagtg ggtccctggt ctcctacaag tcctggggca ttggagcccc 480

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```

aagcagtgtt aatcctggct actgtgtgag cctgacctca agcacaggat tccagaaatg 540
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gctggaaaat acatgtctag aactgatcca gcaattacaa cggagtcaaa aattaaaccg 660
gaccatctct ccaactcaac tcaacctgga cactctcttc tctgctgagt ttgccttgtt 720
aatcttcaat agttttacct accccagtct ttggaaccyt aaataataaa aataaacatg 780
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naa 843

```

<210> 341

<211> 1293

<212> DNA

<213> Homo sapiens

<400> 341

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acggatatcc tctgttgggg gagaagcaac attttgtgat tttccaaaaa taaaccatgg 180
aattctatat gatgaagaaa aatataagcc attttcccag gttcctacag gggaagtgtt 240
ctattactcc tgtgaatata attttgtgtc tccttcaaaa tcatttttga ctcgcataac 300
atgcacagaa gaaggatggt caccaacacc aaagtgtctc agactgtgtt tctttccttt 360
tgtggaaaat ggtcattctg aatcttcagg acaaacacat ctggaagggtg atactgtgca 420
aattatttgc aacacaggat acagacttca aaacaatgag aacaacattt catgtgtaga 480
acggggctgg tccaccctc ccaaatgcag gtccactgac acttcctgtg tgaatccgcc 540
cacagtacaa aatgctyata tastgtcgag acagatgagt aaatatccat ctggtgagag 600
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tccacctatt gacaatgggg acattacttc attcccgttg tcagtatatg ctccagcttc 780
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gaatcaatca taaartgcac acctttattc agaactttag tattaatatca gttctyaatt 1140
tcatttttwa tgtattgttt tactcctttt tattcatagc taaaattttg gattaatttg 1200
tgaaaatgta attataagct gagaccggtg gctctcttct taaaagcacc atattaaatc 1260
ctggaaaact aaaaaaaaaa aaaaaaaact cgc 1293

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<210> 342

<211> 1273

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (483)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1247)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1262)  
<223> n equals a,t,g, or c

<400> 342  
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aggaggaaga aagggaggcc acaaaggccg ggcgaggcag tatacaagcc ctgaggagat 120  
cgacgcgcag ctgcaggctg agaagcagaa ggccaggga gaagaggagc aaaaagaagg 180  
tggagatggg gctgcagggtg accccaaaaa ggagaagaaa tctctagact cagatgagag 240  
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cgagaacccc aaccgggtgg cacagacaac caaaaaggctc acacaactgg atctggacgg 360  
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ggnccatcatc cggaaacagc gggaggaggc tgcccggaa aaggaagagg aaaggaaagc 540  
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tcgcccaccc tgtgcccttg cgccgctgca acagcccctc atggccagga gcccccatg 720  
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cacacagccc cggactgtgt tgctgggtg ctcatcaga gaggggctat catctgggag 960  
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tgcccatttt cagccctacc cattgatcat ttcaagaaac ctctgtttac tgtgtggcac 1140  
ccaggcaaaa catgtccac aaattcaact tgtatatattg gcagattaaa cttgacatta 1200  
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gnngtttaaa tta 1273

<210> 343  
<211> 1793  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1251)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1267)  
<223> n equals a,t,g, or c

<400> 343

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gactacagcg atgatgggtg ggtgaatttg aaccggcaag gcttcagcta ccagtgtccc 180
caggggcagg tgatagtggc cgtgaggagc atcttcagca agaaggagg ttctgacaga 240
caatggaact acgcctgcat gcccacrcca cagagcctcg gggaacccac ggagtgtctg 300
tgggaggaga tcaacagggc tggcatggaa tggtagcaga cgtgctccaa caatgggctg 360
gtggcaggat tccagagccg ctacttcgag tcagtgtctg atcgggagtg gcagttttac 420
tgttgctcgt acagcaagag gtgcccatac tcctgctggc taacaacaga atatccaggt 480
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<210> 344

<211> 1672

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (95)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1667)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1668)

<223> n equals a,t,g, or c

&lt;400&gt; 344

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gagtccagag gacagctggg tctccaagtg gcagcgagtc agtaacttta agccagggtg 480
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&lt;210&gt; 345

&lt;211&gt; 2109

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 345

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acaaatttgc cttaacagta attagatgtt gaataataatt ttaacatttt attaatgact 840
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<210> 346

<211> 1714

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (21)

<223> n equals a,t,g, or c

<400> 346

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ttaaggaatt tttgaagaat tacttgacaa atcttcttaa ggatggagaa gatttgatgg 540
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ttgaatctca attttggct gacacagaga gattttatag cagagagagt actgaattct 960
tgcagcagaa cccagttact gaatatatga aaaaggcaga ggctcgtctg cttgaggaac 1020
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<210> 347

<211> 1672

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1667)

<223> n equals a,t,g, or c

<400> 347

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<210> 348  
<211> 1483  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (19)  
<223> n equals a,t,g, or c

<400> 348  
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gtggcaggga aaacctacag gtggtgtgtg tgtggccgca gcaagaagca gcccttctgt 240  
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<210> 349  
<211> 1842  
<212> DNA  
<213> Homo sapiens

<400> 349  
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tattctttag tggaggctgg atgtgcatta gcctggatcc tcagttctca aatgtgtgtg 180  
gcagccagga tgactagatc ctgggtttcc atccttgaga ttctgaagta tgaagtctga 240  
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<210> 350

<211> 3008

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (9)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (59)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (65)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1307)

<223> n equals a,t,g, or c

<400> 350

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<210> 351  
<211> 2756  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1597)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2540)  
<223> n equals a,t,g, or c

<400> 351  
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<210> 352

<211> 1645

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (97)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1574)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1596)

<223> n equals a,t,g, or c

<400> 352

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atataagcct aagtttttat tcataagttt tattgaagtt ctgatcggtc cccttcagaa 180
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<210> 353

<211> 1637

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (738)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (771)

<223> n equals a,t,g, or c

<400> 353

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cgctggacaat ggctacttgg agggactggg gcgcggcctg aaggccgggg tgctcagcca 180  
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gagcactgat tatggtaact tcctggccaa cgaggcatca cctctgacgg tgtcagtcac 300  
cgatgaccgg ctcaaggaga agatgggtgg ggagttccgc cacatgagga accatgccta 360  
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cccactaggc agcttcgagc agatggaggc cgtgaacatt gctcagacac ctgctgagct 540  
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<210> 354

<211> 1119

<212> DNA

<213> Homo sapiens

<400> 354

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ccctgcgggg agtcggcccc cgaccttgcc ggcttcaccc tcctaattgcc agcagtatct 180  
gttggaatg ttggccagct tgcaatggat ctgattatct ctacactgaa tatgtctaag 240  
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acagaaggaa attcaacaga acttagcata aatgctgaag tgtattcatt gccttcaaga 360  
aagctgggtg ctctacagtt aagatccatt tttattaagt ataatcaaa gccattctgt 420  
gaaaaactgc tttcctgggt gaaaagcagt ggctgtgcca gagtcattgt tcttccragc 480  
agtcattcat atcagcgtaa tgatctgcag cttcgtagta ctcccttccg gtacctactt 540  
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gaaaaaagcc ggtgcattcc tgaaatagat gattccgagt tttgtatccg cattccggga 660  
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<210> 355

<211> 738

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (654)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (689)

<223> n equals a,t,g, or c

<400> 355

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cggaatttca tcaatttgaa tgaattcaca acctatggca gcgargaaag caccaaaccg 120  
gcctccgtcc ggccctgct gtttgamatc tccttctca tgctgtgcca tgtggcccag 180

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acctatggtt caraggtgat tctgtccgag tcgcgcacag gagctgaggt gcccttcttc 240
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tgcttccgcc ccgactccac caaagtggag tccctggtgg ccctgctcaa caactcctcg 360
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<210> 356

<211> 1966

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (56)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (788)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1753)

<223> n equals a,t,g, or c

<400> 356

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<210> 357

<211> 1562

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (16)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (18)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (260)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (262)

<223> n equals a,t,g, or c

<400> 357

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ctgaaacca gaagcctcat gctccattac gagttccttc agagagttaa gcggctgccc 540
ctggagtaca gctacgggga atacagagat ctcttccgtg attttgggac ccactacatc 600

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acagaggctg tgcttggggg catttatgaa tacaccctcg ttatgaacaa agaggccatg 660
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cg                                     1562

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&lt;210&gt; 358

&lt;211&gt; 1931

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 358

```

ctcgggagct cggactccta cgcatacccg ggaaggggccg ccgccccgcc cgcggtgct 60
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ycttttttac attgaaaaaa atccagtggg tgcttttgaa tgcatcaagt aaagaagaag 1560
aaaagaatac atccgatgcy tagattcttg accatgtagt aatctataaa attgctatat 1620

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ggaagccaca aaatagacag acaccctgac tgttgaaggg aggttttaaaa acagatatc 1740
aattgaaatg taagagagca cccaattga gagcccaggt tacgaagaca agcttgccctc 1800
gcctgacttt tctgtccctt gttctgcagg attagtattc tgttacagac ctctagtttt 1860
tagactcttc aattaaaggg ccaatgggta taacctgcaa aaaaaaaaaa aaaaaaaaaa 1920
aaaaaaaaaa a 1931
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<210> 359

<211> 869

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (869)

<223> n equals a,t,g, or c

<400> 359

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ccaaagtgga tgcactgaag aagatgttgt tggatcaggg gggctttgcc ccgtgttttc 180
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caaaactacag cgggattatc ctgatgccct tatcaccaac tactatctat ggctgctgt 300
gcakttagcc aacttctacc tggccccctt tcattacagg ttggccgttg tccaatgtgt 360
tgctgtttatc tggaaactcct acctgtcctg gaaggcacat cggctctaag cctgcctcac 420
tccatcgttt ccaccttgca gtgatgcagc ttgacctggg aacggtcaga caacctcctc 480
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accttgcaat gcccctcttc actctaaaat gtacactgac tgcttttagag cccttgataa 600
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ccttttatatg gtgcctcagt aaatatgtta ttaaatatgt aatccggaaa aaaaaaaaaa 840
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 869
```

<210> 360

<211> 561

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (521)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (525)

<223> n equals a,t,g, or c

<220>

<221> misc feature

&lt;222&gt; (560)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 360

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ctcctgagcc gagtagatat cccggagttc cgcgcggcgc cagcccttcc gccacggccg 120
tctctggaga gcagcagcca tggccctacg ctaccctatg gccgtgggcc tcaacaagg 180
ccacaaagtg accaagaacg tgagcaagcc caggcacagc cgacgccgcg ggcgtctgac 240
caaacacacc aagttcgtgc gggacatgat tcgggaggtg tgtggctttg ccccgtagca 300
gcggcgcgcc atggagttac tgaaggtctc caaggacaaa cgggccctca aatttatcaa 360
gaaaagggtg gggacgcaca tccgcgccaa gaggaagcgg gaggagctga gcaacgtact 420
ggccgccatg aggaaagctg ctgccaagaa agactgagcc cctcccctgc cctctccctg 480
aaataaagaa cagcttgaca gaaaaaaaaa aaaaaaaaaa ntcngggggg ggcccggtag 540
ccattcgccc tawagggggn g 561
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&lt;210&gt; 361

&lt;211&gt; 1680

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (33)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 361

```
gagtttacac tgaccatggt ggaatgttaa ggngaacccc accccttctt acagatgggtg 60
accagagacc tgctcttggg aacagccaga gtaagattgg aaccagact tgcaagccag 120
cgctgtttgc attaaaaggg tgggtgagtc aggaccctg gctcargagc cgyctctcct 180
aaaagagggt ttcaaggcca aatgggtttg tcaacggtgc tgtctccctt tcttgagat 240
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tattaactgc tcctgggcct ggagcagtat tcccacctta agattcccag catccctgtg 360
ctgtcccggc tctcattcat gccgaaggcc caaccattg gctgtgttct gtttgaagat 420
ttggggggcg ccttctcttt cttcccagg gaattctcta gcagagggag gggaccacc 480
ccagtgaaga agtagattgc tgcctctagc cagagacctg aactggggaa tttgaacatt 540
cctttacatt gttggagaaa tgaagccaaa gttattcaga tggttttccc aggctaaagg 600
aaagtcacct gcaagagatc ccggcactga tctggagcag ctgacagggt gggctccct 660
taccaaagag aagaaccact ctctggcgct ggggtgacct gctggctggg cctgtaagg 720
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gggtggccac ccgacctgcc ccgaactt ttggatactg gaggcagttg cataggtctc 1440
cctctctggg caccaggact cagtccagcc caagactact ctgggcagct cccatcccag 1500
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gagagtgggt ttgggaagag tgaggggtggt tggggagagg ggaccgatgt gcctcattgt 1620
ttagtggtga ttacaaatat gcttttctgg ataaagtgtg gttggttgct cttggaaaaa 1680
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<210> 362

<211> 740

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (591)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (709)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (718)

<223> n equals a,t,g, or c

<400> 362

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ctggcctgga agtttccctt ccagtctgga ttttgtctgc tccttccttc cccctcaccc 120
cgttacctct tcacctccca tctcatttca ctgtgtagct cagtctctcc caccgacata 180
attggggaca gtgggggctc tcttaccagc ctccctcagca acgcacgtcc atcaggcctg 240
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ccacctggag cccttagcat ttccttgctc cctcttcccc aaaacctctg taaagggtac 480
gagagggacc ccctgccgag ccgcccgcga ctccaggcag tccgatctaa gaagcagaag 540
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camatccctt cttgggtgcc tkgatcttct tytgcccccg gggccaggac ccactgtgct 660
gttttcttgt tcagttttgt ggggaaagga accaagggtt ttgccaaagna accagtttct 720
tgaaaggggt tagggaaggg                                     740
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<210> 363

<211> 1324

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (385)

<223> n equals a,t,g, or c

<400> 363

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gcgcgggtgtc gggcatcgac aacgtgtgct agctggcggc gcggctgtc ttcagcaccg 240  
tggagtgggc gcgccacgcg cccttcttcc ccgagctgcc ggtggccgac cagggtggcg 300  
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&lt;210&gt; 364

&lt;211&gt; 2853

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 364

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aatattctta ttttaatacgt ctgtagaagg taggtgtgga acctccatgc taccatgtgc 180  
acaaacctaa ttatgctttg ggtcacttgt cagttcagta aatctgcctt cctcttctcc 240  
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<210> 365

<211> 1837

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (136)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (749)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1816)  
<223> n equals a,t,g, or c

<220>  
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<222> (1829)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1832)  
<223> n equals a,t,g, or c

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gccgagggct gccggnaggg ccaggggcag aggggtggcg cctggccaga cgccttgcca 180  
cggatacggg ttaagggtgc tgtagccaag agctcgtggc gtctagattc ctacaagagg 240  
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ggaacttggc tgctctgggg aaggagtagt caaгааagcc agttccaggg gtcacaaggc 420  
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gccccccagc cacagcccac ctgctgaggg ggacccccgc acccaccagg tactggtgag 720  
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<210> 366

<211> 1823

<212> DNA

<213> Homo sapiens

<400> 366

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<211> 898

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (17)

<223> n equals a,t,g, or c

<220>  
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 <222> (25)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (30)  
 <223> n equals a,t,g, or c

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<210> 368  
 <211> 1117  
 <212> DNA  
 <213> Homo sapiens

<400> 368  
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<210> 369

<211> 2226

<212> DNA

<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (35)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

<400> 369

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<210> 370

<211> 3636

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1937)

<223> n equals a,t,g, or c

<400> 370

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<210> 371

<211> 4039

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1085)

<223> n equals a,t,g, or c

<400> 371

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&lt;210&gt; 372

&lt;211&gt; 1599

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 372

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&lt;210&gt; 373

&lt;211&gt; 464

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 373

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<210> 374

<211> 890

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (886)

<223> n equals a,t,g, or c

<400> 374

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<210> 375

<211> 1874

<212> DNA

<213> Homo sapiens

<400> 375

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aaaaaaaaaa aagc 1874

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<210> 376

<211> 2018

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1997)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2012)

<223> n equals a,t,g, or c

<400> 376

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<210> 377

<211> 818

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (818)

<223> n equals a,t,g, or c

<400> 377

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<210> 378

316

<211> 2565  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (1508)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (2565)  
 <223> n equals a,t,g, or c

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&lt;210&gt; 379

&lt;211&gt; 1680

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 379

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gtttttttaa tgtatttttg ccctgaatta agtggttaatt tgatggaaac tctgctttta 1620
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&lt;210&gt; 380

&lt;211&gt; 1267

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (214)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1165)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1255)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1262)

<223> n equals a,t,g, or c

<400> 380

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atgtatatgg ctttactcaa gcaratctca tctcatgaca ggcagccacg tctcaacatg 180
ggtaaggggt gggggtggag ggggaatgtgt gcancgtttt tacctaggca ccatcattta 240
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gtcaagattt tacttggcat tgagtagttt ttttcaatag taggtaattc cttagagata 360
cagtatacct ggcaattcac aaatagccat tgaacaaatg tgtggggttt taaaaattat 420
atacatatat gaggttgcta tatttgctat tcaaaatttt gtaaatatgc aaatcagctt 480
tataggttta ttacaagttt tttaggattc ttttggggaa gagtcataat tcttttgaaa 540
ataacatga atacacttac agttaggatt tgtggtaagg tacctctcaa cattaccaa 600
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gcactgatta aaataggatt attttaarta caaaaggcat tttatatgaa ttataaactg 720
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atgtcatttt taaaaagaag gacttagggg gtcgttttca catatgacaa tgttgcat 840
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gttcgctcgt gcagtactgt tggttaaatg acaatttatg tggattttgc atgtaatata 960
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anaaatt 1267
```

<210> 381

<211> 1031

<212> DNA

<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1015)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 381

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ggtccaggat tctagcagtc ctggggcact gacctttgcc agctacctgg gggagggctt 60
gccactggaa aacctttcag gccgccccca tcagtgggct ccaaagtaaa tggctgaaaa 120
caaaaatggt tcaattccta acagttttcc tttttccact gtgtgactga aagtcctat 180
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tacgtacctt aaggcaccca gttcactagt ctgtggggtc ctggagcctg tctcttcttt 360
ctggagggtt aaactgaata gcaataatta cgttacccaa agcatgtgga ggaaaagtga 420
aaccagccac ggagacgctg gccacgggc tcggcctgcg gtgtggcctg ctttgcctac 480
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tatacatgat ataattttg tatatatgaa atctctctat atttgtttaw tttgagccat 720
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ggggggggcc c 1031

```

&lt;210&gt; 382

&lt;211&gt; 1597

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1577)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1579)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1597)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 382

```

atcacgtgga cgctactcgc tatccccggc ctgttggtt cttccgcgct ggagtatcca 60
gataggcgac acgccgrcgg gcggctgagg cggaatggc tgctgtactg cagcgcgtcg 120
agcggctgtc caatcgagtc gtgcgtgtgt tgggctgtaa cccgggtccc atgacctcc 180
aaggcaccaa cacctaccta gtggggaccg gccccaggag aatcctcatt gacactggag 240
aaccagcaat tccagaatac atcagctgtt taaagcaggc tctaactgaa tttaacacag 300

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agagagaaga aattatagga aatggagagc aacaatatgt ttatctgaaa gatggagatg 480
tgattaagac tgagggagcc actctaagag ttctatatac ccctggccac actgatgatc 540
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attcatgcaa atgaattttt ggtgattgaa aaatattaaa ttcccaattt aaagtaaaaa 1560
aaaaaaaaaa aaaaaangnc cccggggggg ggccggn 1597
```

<210> 383

<211> 175

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (95)

<223> n equals a,t,g, or c

<400> 383

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ccaaacatct actacaaggt atgagggtc ctctnacgtg gctatcctga atccagccct 120
tcttgggggtg ctcctccagt ttaaattcct ggtttraggg acamctstaa catct 175
```

<210> 384

<211> 2171

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2166)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2170)

<223> n equals a,t,g, or c

<400> 384

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agaacaagag ctggacacat taaaaagaaa gagtccatca gatttgtgga aagaagactt 60
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cggacttcct gggaaagtgg ggaaggccaa ggggaaaaaa acacaaatgg ctgaagtttt 180
gccttctccg cgtgggtcaa gagtcattcc acgaataacc atagaaatga aagcagaggc 240
agaaaagaaa aataaaaaaga aaattaagaa tgaataact gaaggaagcc ctcaagaaga 300
tggtgtggaa ctagaaggcc taaaacaaag attagaaaag aaacagaaaa gagaaccagg 360
tacaagaca aagaaacaaa ctacattggc atttaagcca atcaaaaaag gaaagaagag 420
aaatccctgg tctgattcag aatcagatag gagcagtgc gaaagtaatt ttgatgtccc 480
tccacgagaa acagagccac ggagagcagc aacaaaaaca aaattcaca tggatttgga 540
ttcagatgaa gatttctcag attttgatga aaaaactgat gatgaagatt ttgtcccatc 600
agatgctagt ccacctaaga ccaaaacttc cccaaaactt agtaacaaag aactgaaacc 660
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gggggncccn g 2171
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<210> 385

<211> 2364

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (19)

<223> n equals a,t,g, or c



&lt;400&gt; 385

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accgttggcc tcataaacct gttttgcaga actcatttat tcagcaaata tttattgagt 120
gcctaccaga tgccagtcac cgcacaaggc actgggtata tggatcccc aaacaagaga 180
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&lt;210&gt; 386

&lt;211&gt; 2864

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 386

```

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ccggtaacaa agaacgaacg gcaggtgatg aagccactat acgacaggta ccggtggtc 120
aacagatcc tctcccgagc taacaccata cccatcattg gttccccctc cagcaagcgg 180

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caccaagtaa gttatataaa ataaaaaaaaa aaaaaaaac tcga 2864

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&lt;210&gt; 387

&lt;211&gt; 2683

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2649)  
<223> n equals a,t,g, or c

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tttccttagat ccacactttc aaagagaaac ccctccagaa ctcccaccct gacagcccaa 180  
caccaccttc ctccctggctt ccagggggca gccagtgga atggaaagaa tgtgggattt 240  
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325

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ctggaarmna aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 2683
```

&lt;210&gt; 388

&lt;211&gt; 1446

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (35)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (37)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (57)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 388

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aagaactaaa acgactcact atagggaaaa actananacg cctgacagga aaccggnccg 60
gaattcccgg gtcgaccac gcgtccgaar argagggtgga ggargagggt gatgttgata 120
gtgatgaaga agaggaggaa gatgaggaga gctcctcgga gggcttgagg gctgaggact 180
gggcccaggg agtagtgagg gccgggtggca gcttcggggc ttatgggtgcc caggaggaa 240
cccagtgcct tactctgcat ttcctggaag gtggggagga ctctgattca gacagtgagg 300
aagaggacga tgaggaagag gatgatgaag atgaagacga cgatgatgat gaggaggatg 360
gtgatgagggt gcctgtaccc agctttgggg aggccatggc ttactttgcc atggtcaaga 420
ggtacctgac ctcttcccc attgatgacc gcgtgcagag ccacatcctc cacttggaa 480
acgatctggg tcatgtgacc aggaagaacc acgccaggca ggcgggagtt cgaggtcttg 540
gacatcaaa ctgagtcact ggacctagct gtgccccaa cctagattgg cagcaccacc 600
ccagggcaga ggactctctg ggcacccgct gtgcatggag ccagagtgc gagccccaga 660
tcctttagta atgcttcccc tggctctgca acaggcccg tcacctcggc cgggcccggg 720
gctgagggtca gcctcactgc ctgcttattg cctctttctc agaatcctct ttcctcccc 780
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ccgtgccctc agtggaacta ccacagcagc agccagggat gggccctgga ggttccccgc 900
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tttcccagtt tgatttcaat aaatctgtcc actccccctt tgtgggggtg aacgttttaa 1380
cagccaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1440
```

aaaaaa

1446

&lt;210&gt; 389

&lt;211&gt; 723

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (705)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 389

```
gggcaagacc tcatgcctaa aaaataaaga gaaagcagag taaaactgga ctctgagata 60
ygactaaagt tctgtgtgat acgtgtgcct tatttagctc aagacattcc tggagcacct 120
ataaaaactg acttgtaatc caggctatgt ctcttttttag ctctgtaatc tttggcaagg 180
ccattggatt cttcagctgt acaattagga gactcgatca ggtgattgcc tttctcagct 240
gtcagttctc taatttcagg cttggtagct tgtaggaact gaaattgcaa ttaaaacctt 300
tataaaactca aactaaatca tgaattacag aaaaagtcca ttcttccaaa acttgatgtt 360
accacactta caagttttaa atatgaagtc gactgtttaa aggattctgc atatattcta 420
gtgtgcacat tcagaaacat ttttcttggg aaaagtaccc aacatttttt ataactgcac 480
atattaattt attgccagaa taaattgcat tgcattgctaa ataaagtcag ataattcaaa 540
tccatttgct tttatgtagt ttttcttcta aatgtcaaca ttttggaatt aaaatgttta 600
tggttttata tgagggtagg aaatcttaac tgctttgggg ggtattgttt ataggctttt 660
tggttatggg cgggtagttt tttaataggg ggattgccca tttcnaccgt ttggggggccc 720
ggg
```

723

&lt;210&gt; 390

&lt;211&gt; 1046

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 390

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cggtgctgac cagcgtccg gtccaccaca ggcaccgcag ctcatctacc aggaatatgt 60
gaaccagcca gatgttcggc cccagcccc ttcgccccga gagggccctc tgcctgctgc 120
ccgacctgct ggtgccactc tggaaagggc caagactctc tcccagggga agaattgggt 180
cgtcaaagac gtttttgcct ttgggggtgc cgtggagaac cccgagtact tgacacccca 240
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ctattactgg gaccaggacc caccagagcg gggggctcca cccagcacct tcaaagggac 360
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aagtccgcag aagccctgat gtgtcctcag ggagcaggga aggcctgact tctgctggca 480
tcaagaggtg ggagggccct ccgaccactt ccagggggaa ctgccatgcc aggaacctgt 540
cctaaggaac cttccttctt gcttgagttc ccagatggct ggaaggggtc cagcctcggt 600
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agccttaggg aagctggcct gagaggggaa gcggccctaa gggagtgtct aagaacaaaa 780
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aatggtgtca gtatccaggc tttgtacaga gtgcttttct gtttagtttt tacttttttt 900
gttttgtttt tttaaagatg aaataaagac ccagggggag aatgggtgtt gtatggggag 960
gcaagtgtgg ggggtccttc tccacacca cttgtccat ttgcaaata attttgaaa 1020
acaaaaaaaa aaaaaaaaaa aaaaaa
```

1046

<210> 391  
<211> 699  
<212> DNA  
<213> Homo sapiens

<400> 391  
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tcttcgcctt agtactcgtg tgaagttggc ggggacggtt cctgtcatct tcttgggctt 120  
atttggtgtg ctgttgagg ggggagacta gagaaatggc agggaaacctc ttatccgggg 180  
caggtaggcg cctgtgggac tgggtgcctc tggcgtgcag aagcttctct cttggtgtgc 240  
ctagattgat cgggtataagg ctcaactctcc cgccccccaa agtggttgat cgttggaaacg 300  
agaaaagggc catgttcgga gtgtatgaca acatcgggat cctgggaaac ttgaaaagc 360  
accccaaaga actgatcagg gggcccatat ggcttcgagg ttggaaaggg aatgaattgc 420  
aacgttgtat ccgaaagagg aaaatggttg gaagtagaat gttcgctgat gacctgcaca 480  
accttaataa acgcataccg tatctctaca aacactttaa ccgacatggg aagtttcgat 540  
agaagagaaa gctgagaact tcggaaaagg ctcatctgtc accctggaga agggaaactg 600  
tacttttccc tgtgaggaaa cggttttgta tttctctgt aataaaatgg ggcttctttg 660  
gaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aagtcgacc 699

<210> 392  
<211> 1545  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (24)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (25)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (54)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (58)  
<223> n equals a,t,g, or c

<400> 392  
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ccggactcgg acgcgtggta gccccaggat gggtaggtc aacgagaaga agacaacatg 120  
tggcaccgtt tgccctcaagt acctgctgtt tacctacaat tgctgcttct ggctggctgg 180  
cctggctgtc atggcagtgg gcatctggac gctggccctc aagagtgact acatcagcct 240  
gctggcctca ggcacctacc tggccacagc ctacatcctg gtgggtggcgg gcactgtcgt 300

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catggtgact ggggtcttgg gctgctgcgc caccttcaag gagcgtcggg acctgctgcg 360
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ctacgcctac taccagcagc tgaacacgga gctcaaggag aacctgaagg acaccatgac 480
caagcgctac caccagccgg gccatgaggc tgtgaccagc gctgtggacc agctgcagca 540
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catgtgcctc tgcggggcag ggccttcctg gttttgtaca ctgctgtacc cagatgccta 1440
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 1545

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<210> 393

<211> 749

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (490)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (748)

<223> n equals a,t,g, or c

<400> 393

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tgaaccggyc caggtcggaa acggagcagt ttcccttgag cggagattca ggtttttcag 180
gtgggtcttg tgagctgggg tctttacaac ccctgccttg gctctgctga caaaaactcc 240
cgcaaaaggg cccctcgtag caaggtcccg ccgccacgag actttcacat caatctcttc 300
cgcatgcagc cctggctgag gcagcacctg ggggatgtcc tgaatttttt acccctctag 360
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ctgaatggcc acccttagac cctgtgatcc atcctctctc ctagctgagt aaatccgggt 480
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gactgcctcg ctgccccacc tcccgtcctc tggcctgtcc ccagattcct tccttggtt 600
acttgactca tgcttgttcc actttcacat ggaatttccc agttatgaaa ttaataaaaa 660
tcaatggttt ccacaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 720
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 749

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<210> 394  
<211> 611  
<212> DNA  
<213> Homo sapiens

<400> 394  
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gtcccggtcg cgaggaggag gaggatgtgg cgcgcgcgagg ggaaatggct gccgaaaaca 120  
agccggaaga gcgtttccca aagtgtattc tgcggaacta gcacctactg tggtctcaac 180  
accgtgccac ctatagaaga tgatcatggg aacagcaata gtagtcatgt aaaaatcttt 240  
ttaccgaaaa agctgcttga atgtctgccg aaatgttcaa gtttaccaaa agagaggcac 300  
cgctggaaca ctaatgagag atcatgatgc agccgtcctt ttggatttct ttttaataat 360  
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aatttaattt cattttttta ttttggtgta caagctgtaa catttcatct ttcaaagtgt 480  
aacacgctga tttcctcaaa tagagatacc cctttgagtg ataaatttgc aaaatgctgt 540  
cttcattttc tgtattaaaa ttcatttcag ttttaaaata aagtgtaatc tgtgttttca 600  
tcctttttaa a 611

<210> 395  
<211> 1856  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1851)  
<223> n equals a,t,g, or c

<400> 395  
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acccgcgccga cgggacccct aaagtctctg ttctgtcggg gcagcccgcg tccgcgcgcg 120  
gagccccggc cggccaggcc ctgccgtca tggtgccagc ccagagaggg gccagcccgg 180  
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atcgaagaa ggctcgaatg agtgagctgg aacagcaagt ggtagattta gaagaagaga 360  
accaaaaact ttgtctagaa aatcagcttt tacgagagaa aactcatggc cttgtagtgt 420  
agaaccagga gttaagacag cgcttgggga tggatgccct gggtgctgaa gaggaggcgg 480  
aagcaagggg aatgaagtga ggccagtggc cgggtctgct gagtccgcag cactcagact 540  
acgtgcacct ctgcagcagg tgcaggccca gttgtcacc ctccagaaca tctcccatg 600  
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ctccagagg tctaccaga aggacccagt tccttaccag cctccctttc tctgtcagtg 780  
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gtagcttctg aaagggtgct tctccattta tttaaaacta cccatgcaat taaaagggtac 1800  
aatgcacaaaa aaaaaaaaaa aaaaaaaccc ggggggsgcc ccggaaccaa nttccc 1856

<210> 396

<211> 2651

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (45)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (47)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2642)

<223> n equals a,t,g, or c

<400> 396

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gagccgaaga tggcagtgaa cgtatactca acgtcagtgga ccagtataaa cctaagtcga 180  
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aaaggaaaagt ttcaggacaa ttttgaattc gttcagtggt tcaagaagtt tttcgatgca 480  
aactatgatg gaaaagacta tgaccctgtg gctgccagac aagggtcaaga aactgcagtg 540  
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ggtgtggtgc gaaagaaccc tgggtgaggc aacggagacg acgaggcagc tgagttgatg 720  
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<222> (2505)

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&lt;211&gt; 1273

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

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 <213> Homo sapiens

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<211> 1522

<212> DNA

<213> Homo sapiens

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<222> (1471)

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<222> (1481)

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<212> DNA

<213> Homo sapiens

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<222> (1223)

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<400> 401

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<210> 403

<211> 1750

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2)



<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (40)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (44)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (70)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (107)

<223> n equals a,t,g, or c

<400> 403

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aattagctaa aaaaggaatt gactatgatt ttccttctt gattttacag aaaacggaaa 660
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aacttttttc tacaatgtat ttgtttgcca gtaggacttg ggagtcattg ggaaaaaaa 1680
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<210> 404

<211> 1339

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (150)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1330)

<223> n equals a,t,g, or c

<400> 404

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gagagtgaat ttatgtgata cactgaaatn acttttgttt ttcttctaac tcatacaaaa 180  
ctggttttga aagtctttgc tttggaagcg tcagacatta gaacaggcca aactggactg 240  
tctgttcata gcgtgcctga ataagaaggc ctcttaggga gccagaggga gcagagtggg 300  
cgtgtcctgc gtgtcttca cctctgggg cgccctgct gcggctggca ggtgcagaca 360  
gcctttgctg gtcccagca cgtccagggt ggggtgctcc ttgcccagca gaaccatccc 420  
cactgtgagg ctgtgagaga tttgtggcag gaactgttta tgaggctcta gttgttctg 480  
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aagcacgcct ttaaataagc aaaaacttta aaaggcagga aagagaattc ttaggcaaat 600  
tcagagaaat aagtgtagt taataactaat cacctcctcc tctgtctctc atcctccttt 660  
ctcccatcaa agcaaaatat ggcctcacca ccagcccca atcagtgtc agaccctctc 720  
tgtgtctgtg tgccctcctg ggagtcagtc agcgtcagg ccaggactgt gcagggccag 780  
ccagcccatg cgctagtcag gagcacaggc aaggggtgct tgtggcagtg gccgggcacc 840  
tgagccccag ctggtgttta aacgtgctga cggcaagggg caatggagtg agtttcccaa 900  
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tattttttat ggatttttca gctcatttca gatgaaggaa ctaagtcatt gtgaactgtc 1020  
tcttgagatc taaaaacaag atgacttttc ctggcacata ttccaaagca aagactttgt 1080  
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tcacgggtaç tctttctgca tttccctcgt gctgtgtccc gctcgggttc caatggacag 1260  
tatcagggct tgtttgactt aggtctttca gttttccttt cggttccctt taaaaaatgt 1320  
gattgttaan ctgcctctt 1339

<210> 405

<211> 482

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (440)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (469)

<223> n equals a,t,g, or c

<400> 405

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cacctacca caaactagtg gatgataaat tttggctatt cagaagacgt ttattatagg 180
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ctgctctaca ccagtgaata atttacctc taataggggg tggtaactat aaagatgata 420
aacatagcat ctttaattggn gtgtgtatga aggtggttgt tacctcttnc tagccacca 480
gg 482
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<210> 406

<211> 1413

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (9)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (24)

<223> n equals a,t,g, or c

<400> 406

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ttatttctgt tcggggccca tctatcctgg acacggcatg atgttcgtcc gcaacgattg 180
caagggtgtc agattttgca aatctaaatg tcataaaaac tttaaaaaga agcgcaatcc 240
tcgcaaagtt aggtggacca aagcattccg gaaagcagct ggtaaagagc ttacagtggg 300
taattcattt gaatttgaaa aacgtagaaa tgaacctatc aaataccagc gagagctatg 360
gaataaaaact attgatgcga tgaagagagt tgaagaaatc aaacagaagc gccaaagctaa 420
atttataatg aacagattga agaaaaataa agagctacag aaagttcagg atatcaaaga 480
agtcaagcaa aacatccatc ttatccgagc ccctcttgca ggcaaaggga aacagttgga 540
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tctgtaacca tttcttttat gtacatttga aaatgccctt tggatacttg gaactgctaa 660
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tattcccttt gttaatgtta tagaaggggg gatacaaaaa ggaactaaca atttgtatgg 1020
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cataatgaca ttgtttgatg aagcctaatt atgctggact gttttgacct ggtttaaccc 1140
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ggtacctcgg ccgcgaccac gctaagccga att 1413
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<210> 407

<211> 1693

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1548)

<223> n equals a,t,g, or c

<400> 407

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gagctccgcc cggaggtact gtgaggccgt tagagctggc ggtggatgac ttccgcattc 480
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cgagagcat ttggtgcccc tccatgttgc aatgcaaaca ccttcaccac tggggcagtg 1620
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tcgagacagt tct 1693
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<210> 408

<211> 1342

<212> DNA  
<213> Homo sapiens  
  
<220>  
<221> misc feature  
<222> (107)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1332)  
<223> n equals a,t,g, or c

<400> 408  
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ggacaggagc tttgccaaaca tggctgaacc cttcaagggtg tggacggaga atgcagacgg 180  
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<210> 409  
<211> 2417  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (107)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (680)

<223> n equals a,t,g, or c

<400> 409

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<210> 410

<211> 1401

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature  
<222> (1394)  
<223> n equals a,t,g, or c

<400> 410  
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tgatcccaaa atgcaaactg acaaaccttt tgaccagacc acaattagtc tgcagatggg 180  
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ttagatccac acagaaggag ctcatgtatt agtcctttgt ttttattcag tgagaaccaa 600  
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<210> 411  
<211> 3016  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (399)  
<223> n equals a,t,g, or c

<400> 411  
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&lt;210&gt; 412

&lt;211&gt; 958

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (930)

&lt;223&gt; n equals a,t,g, or c



<220>

<221> misc feature

<222> (934)

<223> n equals a,t,g, or c

<400> 412

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<210> 413

<211> 500

<212> DNA

<213> Homo sapiens

<400> 413

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atcagagtgc catTTTTTTT tttgttcaaa tgattttaat tattggaatg cacaattttt 420
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gcggccgctc gaattaagcc 500
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<210> 414

<211> 3397

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature  
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<223> n equals a,t,g, or c

<220>  
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<222> (3081)  
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<210> 415

<211> 2880

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<400> 415

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<210> 416

<211> 1616

<212> DNA

<213> Homo sapiens

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<222> (12)

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<221> misc feature

<222> (1610)

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<222> (1611)

<223> n equals a,t,g, or c

350

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1616)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 416

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```

&lt;210&gt; 417

&lt;211&gt; 1815

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (270)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1184)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 417

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```

```

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```

&lt;210&gt; 418

&lt;211&gt; 1966

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (15)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 418

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tatttttatt agagaatgta waaaaaaaaa aaaaaaaaaa ctcgta 1966

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<210> 419

<211> 2852

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2838)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2843)

<223> n equals a,t,g, or c

<400> 419

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```

<210> 420

<211> 2705

<212> DNA

<213> Homo sapiens

<400> 420

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cttgtagagt tgtactgctt tgatttttga agttggggta gtagttagaa ctagatttaa 180
ctagtctata atgaacatga aggcctttat atatgaagt gtataccttt ttgtgttag 240
agaattatgg gaaacctggg aagcaaaact ttccctccag ataattgctt ccaaattcga 300
agagtttagtc accaagagag ccatatgtat gaaagcgtat ctgtgaaagg taggaaactt 360
```



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aaaaa 2705

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&lt;210&gt; 421

&lt;211&gt; 1901

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1828)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 421

```

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&lt;210&gt; 422

&lt;211&gt; 2477

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 422

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aaaaaaaaa actcgag 2477

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&lt;210&gt; 423

&lt;211&gt; 777

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (759)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (764)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 423

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&lt;210&gt; 424

&lt;211&gt; 1649

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 424

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aaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1649
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&lt;210&gt; 425

&lt;211&gt; 1608

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

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<222> (1598)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1600)  
<223> n equals a,t,g, or c

<400> 425  
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gttggttggg accgtgcgcg tgcgcctggg ggcaccgctg ccgttccgag ccatccgggt 180  
gacctgcata ggttcctgcg gggctctccaa caaggctaag gacacagcgt gggtagtgga 240  
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<210> 426  
<211> 1794  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1789)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

&lt;222&gt; (1790)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1793)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 426

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tctctttaa tactaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaann aana 1794
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&lt;210&gt; 427

&lt;211&gt; 770

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (14)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (97)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (618)  
<223> n equals a,t,g, or c

<400> 427  
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<210> 428  
<211> 512  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (18)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (38)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (484)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (491)

<223> n equals a,t,g, or c

<400> 428

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ggactgtacc tgc atcgggg ctgggcgagg gagaataagc tgtaccatcg caaaccgctg 180
ccatgaaggg ggtcagtcct acaagattgg tgacacctgg aggagaccac atgagactgg 240
tggttacatg ttagagtgtg tgtgtcttgg taatggaaaa ggagaatgga cctgcaagcc 300
catagctgag aagtgttttg atcatgctgc tgggacttcc tatgtggtcg gagaaacgtg 360
ggagaagccc taccaaggct ggatgatggg agattgtact tgcctgggag aargcagcgg 420
acgcatact tgcacttcta gaaatagatg caacgwtcag gacacaagga catctataga 480
attingagaca ncttgagcaa gaaggataat cg 512
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<210> 429

<211> 1470

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1346)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1347)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1357)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1387)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1415)

<223> n equals a,t,g, or c

<220>

<221> misc feature



&lt;222&gt; (1454)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1462)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 429

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&lt;210&gt; 430

&lt;211&gt; 434

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 430

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gaatccccag ccggaagct ctcccagtc ttccgcttc ctgttacggg aggcactgtt 180
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&lt;210&gt; 431

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<212> DNA  
<213> Homo sapiens

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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1805)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1815)  
<223> n equals a,t,g, or c

<400> 431  
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cttcctgctg cagaccgcgc ggccgattct cctctgctct ccacgtctca tgaagccgct 180  
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cccagattca cagtatggtg aacttattga aaagtacatt aaagaaggaa agattgtacc 360  
agttgagata accatcagtt tattaagag ggaaatggat cagacaatgg ctgccaatgc 420  
tcagaagaat aaattcttga ttgatgggtt tccaagaaat caagacaacc ttcaaggatg 480  
gaacaagacc atggatggga aggagatgt atctttcgtt ctcttttttg actgtaataa 540  
tgagatttgt attgaacgat gtcttgagag gggaaagagt agtggttagga gtgatgacaa 600  
cagagagagc ttggaaaaga gaattcagac ctaccttcag tcaacaaagc caattattga 660  
cttatatgaa gaaatgggga aagtcaagaa aatagatgct tctaaatctg ttgatgaagt 720  
ttttgatgaa gttgtgcaga tttttgacaa ggaaggctaa ttctaaacct gaaagcatcc 780  
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&lt;210&gt; 433

&lt;211&gt; 2553

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2510)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2516)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 433

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<211> 2532

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<213> Homo sapiens

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&lt;210&gt; 435

&lt;211&gt; 1822

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 435

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&lt;210&gt; 436

&lt;211&gt; 1030

<212> DNA

<213> Homo sapiens

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<212> DNA

<213> Homo sapiens

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<222> (1602)

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<222> (1616)

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<222> (1617)

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<221> misc feature

<222> (1628)



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gcgtatacga cctgtgcgcg caaaagggtg acaaagcctt cctgtgccgc agcctggcag 480
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gatcctgtgc ggctctctcc ggctcaccg gctgcaccac ccgctgtttt gagggctgtg 660
agtgcgacga ccgyttcctg ctttcccagg gtgtctgcat ccctgtccaa gattgtggct 720
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gagcgcagga cttctcccca tgttatggct gatcagtcac ccaccaggaa cgaagatttc 1440
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accctgctct accgcttttc tgggtcacag aggccaaatg tgagagcatt gaataaatat 1560
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attcccgnnt cc 1632
```

<210> 438

<211> 1016

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (27)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (993)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (994)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (995)

<223> n equals a,t,g, or c

<400> 438

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ttccccagc caaactgtct ttgtcaccac gtggggctca cttttcatcc ttccccaaact 180
tccctagtc ccgtactagg ttggacagcc cccttcggct acaggaaggc aggaggggtg 240
agtcacctac tccctcttca ctgtggccac agcccccttg ccctccgcct gggatctgag 300
tacatattgt ggtgatggag atgcagtcac ttattgtcca ggtgaggccc aagagccctg 360
tggccgccac ctgaggtggg ctggggctgc tcccctaacc ctactttgct tccgccactc 420
agccatttcc ccctcctcag atggggcacc aataacaagg agctcaccct gcccgcctcc 480
aacccccctc ctgctcctcc ctgcccccca aggttctggt tccatttttc ctctgttcac 540
aaactacctc tggacagttg tgttgttttt tgttcaatgt tccattcttc gacatccgtc 600
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ccctccccca agatactctt tgtggggaag aggggctggg gcatggcagg ctgggtgacc 720
gactacccca gtcccaggga aggtggggcc ctgcccctag gatgctgcag cagagtgagc 780
aagggggccc gaatcgacca taaaggggtg agggggccacc tcctccccct gttctgttg 840
ggaggggtag ccatgatttg tcccagcctg gggctccctc tctggtttcc tatttgacgt 900
tacttgaata aaaaaaatat ccttttctgg aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 960
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aannnggggg gggccccccc ccccca 1016
```

<210> 439

<211> 594

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (476)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (519)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (530)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (531)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (539)

<223> n equals a,t,g, or c

<400> 439

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atcctgctag acgcgccgcg caccgacgga ggggacatgg gcagagcaat ggtggccagg 120
ctcgggctgg ggctgctgct gctggcactg ctccctacca cgcagattta ttccagtga 180
acaacaactg gaacttcaag taactcctcc cagagtactt ccaactctgg gttggcccca 240
aatccaacta atgccaccac caaggyggct ggtggtgccc tgcagtcaac agccagtctc 300
ttcgtggtct cactctctct tctgcatctc tactcttaag agactcaggc caagaaacgt 360
cttctaaatt tccccatctt ctaaacccaa tccaaatggc gtctggaagt ccaatgtggc 420
aaggaaaaac aggtcttcat cgaatctact aattccacac cttttaaaaa ttttnggga 480
acccaacca aagggtaaaa aaaaaaaaaa atttgggnt tttttgggn naaagggna 540
aaaaaattt ttccccccc ccccaaaaaa aaaaaaaat ttttttttt tttt 594
```

<210> 440

<211> 1580

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (873)

<223> n equals a,t,g, or c

<400> 440

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gcccacgcgt tcgcaaggct gccccatctg gcgctgatta tcctgctgct gccgccaccg 60
ctgctgctgc tctgcaaaat tcagctgctg cctctgtctt gaggacccca gcgcctttcc 120
cccggggcca tgctgcctgc agccacagcc tccctcctgg ggccctcct cactgcctgc 180
gccctgctgc cttttgccca gggccagacc cccaactaca ccagaccctg gttcctgtgc 240
ggaggggatg tgaaggggga atcaggttac gtggcaagtg aggggttccc caacctctac 300
ccccctaata aggagtgcct ctggaccata acggtccccg agggccagac tgtgtccctc 360
tcattccgag tcttcgacct ggagctgcac ccgcctgcc gctacgatgc tctggaggtc 420
ttcgtgggt ctgggacttc cggccagcgg ctcgagcgt tttgtgggac cttccggcct 480
gcgcccctag tcgcccccg caaccagggtg accctgagga tgacgacgga tgagggcaca 540
ggaggacgag gcttcctgct ctggtacagc gggcgggcca cctcgggcac tgagcaccaa 600
ttttgcgggg ggcggctgga gaaggccag ggaacctga ccacgcccga ctggcccgag 660
tccgattacc ccccgggcat cagctgttcc tggcacatca tcgcgcccc ggaccaggtc 720
atcgcgctga ccttcgagaa gtttgacctg gagccggaca cctactgccg ctatgactcg 780
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gatctcagtg tcaccgctga tggcttctca gcctcctaca agaccctgcc gcggggcact 960
gcaaagaag ggcaagggcc cggcccaaaa cggggaactg agcctaaagt caagctgcc 1020
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tgcccaaagc agtgccgccg gacaggcacc ttgcagagca acttctgtgc cagcagcctt 1140
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gcctccctga agttttacgt gccttgcaag cagtgcctcc ccatgaagaa aggagtcagt 1320
tatctgctga tgggccaagg agaaagagaac agaggcccc tccttcctcc agagagcttt 1380
gtggttctcc accggcccaa ccaggaccag atcctacca acctaagcaa gaggaagtgc 1440
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373

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ccctctcaac ctgtgcgggc tgctgcgtcc caggactgag acgcaggcca gccccggccc 1500
ctagccctca ggccttcttt cttatccaaa taaatgtttc ttaatgagga atgggtcaga 1560
tctccatgct tatggtaaaa                                1580

```

&lt;210&gt; 441

&lt;211&gt; 1082

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (136)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (462)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (465)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1074)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 441

```

ctgccgagcg cctcttgag ctgggctttc ccccgcggtg cggcgccagg agccgccttt 60
tccgctgggt gtcactcggg ggtggggaag atggccatt caaaagcgcc gcgagggggc 120
ccggccagtg cccttnagt agcgctcgca agaggacggc agaggcccg cagctcggag 180
ctccgggacc ttgtggcgca tcaggacggc gctgtccctc tgccgggacc cagagccgcc 240
gccgcgcgtc tgcttcctgc gtgttagcct cctctgcgcg ctccgggag gcggccgtgg 300
gagccgctgg ggcgaggacg gcgcgaggct gctgctgctg cccccggccc gcgcgctgg 360
aaacggagag gccgagccaa gcggcgcccc ctcttatgct gggaggatgc tggagagtag 420
cggctgcaaa gcgctgaagg agggcggtgt ggagaagcgc anacngggtt gttgcagctc 480
tggaagaaaa agtggtgcat cctcaccgag gaagggtgc tgcttatccc gcccaagcag 540
ctgcaacacc agcagcagca gcaacagcag cagcagcagc agcaacaaca gcccgggcag 600
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aagctcaagg aactgcactt ctccaacatg aagaccgtgg actgtgtgga gcgcaagggc 720
aagtacatgt acttcactgt ggtgatggca gagggcaagg agatcgactt tcggtgcccg 780
caagaccagg gctggaacgc cgagatcacg ctgcagatgg tgcagtacaa gaatcgtcag 840
gccatcctgg cggtaaaatc cacgcggcag aagcagcagc acctgggtcca gcagcagccc 900
ccctcgcagc cgcagccgca gccgcagctc cagccccaac cccagcctca gcctcagccc 960
caaccccagc cccaatcaca accccagcct cagccccaac ccaagcctca gcccagcag 1020
ctccamccgt atycgcatyc amattcamat ycamaatctt atccttmatt tggnaaccaa 1080
aa                                                                 1082

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&lt;210&gt; 442

&lt;211&gt; 1241

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 442

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agacgagcgt ggcggccgcg gctgctcggg gccgcgctgg ttgcccattg acagcggcgt 60
ctgcagctcg cttcaagatg gccgcttgct cgcattcatt ttctgctgaa cgacttttaa 120
ctttcattgt cttttccgcc cgcttcgata gcctcgsgcc ggctgctctt tccgggattt 180
tttatcaagc agaaatgcat cgaacaacga gaatcaagat cactgagcta aatccccacc 240
tgatgtgtgt gctttgtgga ggggtacttca ttgatgccac aaccataata gaatgtctac 300
attccttctg taaaacgtgt attgttcgtt acctggagac cagcaagtat tgtcctattt 360
gtgatgtcca agttcacaaag accagaccac tactgaatat aaggtcagat aaaactctcc 420
aagatattgt atacaaatta gttccagggc ttttcaaaaa tgaaatgaag agaagaagg 480
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aattctttga ccagaacaga ttggatcggg aagtaaacaa agacaaagag aaatctaagg 660
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tcagtcacca gagagatgga ctgacaaatg ctggagaact ggaaagtac tctgggagt 960
acaaggccaa cagcccagca ggaggtattc cctccacctc ttcttgtttg cctagcccca 1020
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ccagcaacag ccccgagcgt aaccaccaat cttcttttgc caatagacct cgaaaatcat 1140
cagtaaatgg gtcattcagca acttcttctg gttgatacct gagactgtta agggaaaaaa 1200
aaaaaaaaaa accccggccg ctccacttc agatttgtaa c 1241
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&lt;210&gt; 443

&lt;211&gt; 968

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 443

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actctgtaat aaaaaatcta cagtcacgtt ggagatcacc atcccatgaa aattctattt 120
agtattttca gagaaaattg aagggttttt taaacatcac tggatttctt gattgaggaa 180
acaagtcttg aaataatagc acaatttcaa agaagagact ctttgcaaag ttgataacat 240
ttcaaacctt gaaggacagt gacttattat gtwagttcaa tkttgtaagt ycattatgtw 300
agatcctttt tttttttcat aatatgtatt cttggctgct atgcgtggtt tttcaggaaa 360
tttaattatc ttactgagat gtgaaagcaa aactagtaac agaacttaca ttttatttca 420
tgctttctta aaccctgca tattctgggtg aaacatgtaa aatacttta gtaaaattga 480
acatttttat ttgaattttt gctgaactga taaagggtgt tatatttttg tttgttkgtt 540
tgtttaattc atgtttgttg ggactgaggt ttaggaagtt tgttactggt taaaaacctc 600
aatgaaatg cgaaagaatt tgaatttttc ctgcatatgt caactttgga cagctttcaa 660
gaaaaatgag aaaagtttca acttctggcg gttaaaatat taatgcagaa tttactaaga 720
ttttattcat ttgcattagc aaatattcat gcagcagcag ttgactgaaa atttattctt 780
atgagacgta tagtattcat ttttaaatgc atgattgtac attatgtata gacgacaatg 840
tttttaattt ataaatttca ttctttgtta attgcatggg tttttctgca gcttattgtg 900
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aaaaaaaaaa
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375

<210> 444  
<211> 1360  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (114)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (302)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (330)  
<223> n equals a,t,g, or c

<400> 444  
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cgggaagaga ccgtgaccgc caccgccact tcccaggtag cccagcagcc tccagccgct 180  
gccgcccctg gggaacaggc cgtcgcgggc cctgcccctc gactgtcccc agcagtacca 240  
gcaaaagaccg cccagtgtcc cagcctagcc ttgtggggag caaagaggag ccgcccggcg 300  
angaaaagtgg cagcgcgggc gcaagcgcmn aaggagccac aggaggaaac gagccagcag 360  
caggatgata tcgaagagct ggagaccaag gccgtgggaa tgtctaacga tggccgcttt 420  
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actgaaacca ccgtggaagt cgcctggtgt gaactgcagg atcgaaaatt aacaaagtct 540  
gagaggcaga gatttaaaga agaagctgaa atgttaaaag gtcttcagca tcccaatatt 600  
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cgaactccac ctatcattca ccgcatctt aaatgtgaca acatctttat caccggccct 840  
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aagagtgtga taggtacccc agagttcatg gccctgaga tgtatgagga gaaatatgat 960  
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ccttactcgg agtgccaaaa tgctgcgcag atctaccgtc gcgtgaccag tgggggtgaag 1080  
ccagccagtt ttgacaaagt agcaattcct gaagtgaagg aaattattga aggatgcata 1140  
cgacaaaaca aagatgaaag atattccatc aaagacctt tgaaccatgc cttcttccaa 1200  
gaggaaacag gagtacgggt agaattagca gaagaagatg atggagaaaa aatagccata 1260  
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<210> 445  
<211> 1835  
<212> DNA  
<213> Homo sapiens

<220>

<221> misc feature  
<222> (326)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1229)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1738)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1747)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1758)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1801)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1806)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1831)  
<223> n equals a,t,g, or c

<400> 445  
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agctctttcc caggtgttga ctccagctcc agcttcagct ccagctccag gtcgggctcc 180  
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cccgtggaca gagtggaaacg yttgnaatt cacagctcat gttctttctc agaagtttga 360  
gaaagaactt tccaaagtga gggaaatatgt ccaattaatt agtgtgtatg aaaagaaact 420  
gttaaaccta actgtccgaa ttgacatcat ggagaaggat accatttctt aactgaact 480  
ggacttcgag ctgatcaagg tagaagtga ggagatggaa aaactggta tacagctgaa 540  
ggagmstttt ggtggaaagct cagaaattgt tgaccagctg gaggtggaga taagaaatat 600  
gactctcttg gttagagaagc ttgagacact agacaaaaac aatgtccttg ccattcgccg 660

```

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cagcaaaccg tctgtggttc agctcaactg gagagggttt tcttatctat atggtgcttg 840
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caacaacaac atgtacgtca acatgtacaa caccgggaat attgccagag ttaacctgac 1080
caccaacacg attgctgtga ctcaaactct ccctaagtct gcctataata accgcttttm 1140
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ccacactaga gatctaggac atttgtcttg atttggtag tctcttggg atcatctngc 1740
ytttcangcg cmttttgnca taaagtcygt cyagggtggg attgtcagag gtctaggggc 1800
ncttgnnggc ctaatggaac ccttctgtga ngaag 1835

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&lt;210&gt; 446

&lt;211&gt; 1355

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (55)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 446

```

ggcacgagcg cgctgcacgg gaagtcgaag cggagatccc ggggtcgcgc gaganccgca 60
agcggagtgt gtgggcgcta tgctatcacc cgaggcagag cgagtgcgtc ggtaccttgt 120
agaagtggag gagctcgccg aggaggtgct ggcggacaag cggcagattg tggacctgga 180
cactaaaagg aatcagaatc gagagggcct gagggccctg cagaaggatc tcagcctctc 240
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ccttggtagc caccagtggg tgtgtggggc agtggctgtg ggggtgtaag aatgactgca 780
acaggcactt cccaacaatg gcctgctgtt cacatggacc ctgagcaagg aaggaggag 840
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ccttcgtggc cactctttac tcaggagggc cttgcagagt cctgcaccag gcctgggtga 1140

```



```

gtggatgcgc ctcttaccat atgacacgtg tcaagatgcc cttccgcccc ctctgaaagt 1200
ggggcccggc cagcactgct cgttactgtc tgccttcagt ggtctgaggt cccagtatga 1260
actgccgtga agtcaaaaact cttatgtgtt cattaagggc tcaataaatg ttagctgaat 1320
gaawaaaaaa aaaaaaaaaa amawaaaaaa aaaaaa 1355

```

```

<210> 447
<211> 375
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (153)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (313)
<223> n equals a,t,g, or c

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<400> 447
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gtctggaggt gagctaattg atgagtgaat atnagcagtg ggtgttcctc atctctttga 180
ggatttgcct cagagttcac taccaaggga tttctggaac taggwgccat tctttacatc 240
agttcttgag ggttctttga tatcaggggc aaaatgatcc cttctctttt ctttcttata 300
tcctgtgctt tgnctcctgg gtgatttctc ttcaagtcag ttgtgggagg tgcctaggaa 360
caacgctaac acggg 375

```

```

<210> 448
<211> 1393
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc feature
<222> (1360)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (1383)
<223> n equals a,t,g, or c

```

```

<400> 448
tcttttacat gtttaaattt aaaccattct tcgtgacccc ttttcttggg agattcatgg 60
caagaacgag aagaatgatg gtgcttggtt ggggatgtcc tgtctctctg aactttgggg 120
tcctatgcat taaataattt tcctgacgag ctcaagtget ccctctgggc tacaatccct 180
ggcggtggc cttcatccct tgggcaagca ttgcatacag ctcatggccc tccctctacc 240
ataccctcca ccccggttcg cctaagctcc cttctccggg aatttcatca tttcctagaa 300
cagccagaac atttgtgggc tatttctctg ttagtggtta accaaccatc tgttctaaaa 360

```

```
gaagggctga actgatggaa ggaatgctgt tagcctgaga ctcaggaaga caacttctgc 420
agggtcactc cctggcttct ggaggaaaga gaaggagggc agtgctccag tggtagagaa 480
gtgagacata atggaatcag gcttcacctc caaggacacc tatctaagcc attttaaccc 540
tcgggattac ctagaaaaat attacaagtt tggttctagg cactctgcag aaagccagat 600
tcttaagcac cttctgaaaa atcttttcaa gatattctgc ctagacggtg tgaagggaga 660
cctgctgatt gacatcggct ctggccccac tatctatcag ctctctctcg cttgtgaatc 720
ctttaaggag atcgtcgtca ctgactactc agaccagaac ctgcaggagc tggagaagtg 780
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tgcgctcaag agcagctact acatgattgg tgagcagaag ttctccagcc tccccctggg 1140
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gatctcgcaa agttattctt ccaccatggc caacaacgaa ggacttttct ccctggtggc 1260
gaggaagctg agcagacccc tgtgatgcct gtgacctcaa ttaaagcaat tcctttgacc 1320
tgtcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1380
aanaaaaaaa aaa 1393
```

<210> 449

<211> 1663

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (180)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (621)

<223> n equals a,t,g, or c

<400> 449

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ggacttgag aagttggtga ccagggtaaa agtaggcagc gagccagcaa aagactgttt 120
gccagcaaa cctcagagg ccacctcaga ccggtcagag ggcagcagcc gggacgcagn 180
ggtagcgacg agaacgagga gtcgagcgtt gtggattacg tggaggtgac ggtcggggag 240
gaggatgcga tctcagatag atcagatagc tggagtcagg ctgcggcaga aggtgtgtcg 300
gaactggctg aatcagactc cgactgcgtc cctgcagagg ctggccaggc ctagacaggg 360
aagtctgtta gaactgctgt gctgatcaac gggacgctcc gtctttgaag aaagaagaga 420
tggctctctc ccagccatgg gccacccttg ccagtractc caagtggaa tacttagctc 480
gcgtgtgcct ggarggtgag ggaagtccag cgactctcag acgcacctcc cagaggaccg 540
gtgggaattg ttcatagtgc caaagtccca mtactgcgtt ttcaatgggt ccttgtacat 600
agtttgctcc tctgscctag ncctcacctc ttgctatact ggraccgatt tgtacaatgt 660
```

```
gggaattttg ttaccytttt aatcaagggc aacttccttt tccagcacta ccattgtaag 720
gttkttttca ggagggaggg staaccacct tgcttttctc ttttctcttt ttcttttttt 780
tatttttggt ttattaattt ggggaaaggg gtgttagcat tagtgccatg atatctactg 840
gattttaagt agggagactt tttttttaa ggtaggttga aatttgggag atttctcggc 900
aggaagggct gaaatccagg cccctgtctc aacttgagag gaggtgacag acggcagatc 960
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tattgtgaca ttaaaacaac aacaataaga tcttcctatc tggagggtac agagggtgaat 1260
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ttagctcaaa gcctcaccat gaattgattt tttttgtttg tgtgtgtgtt tgttttggga 1380
caattttaga tacctgagtg cactttttca gttagtccta acttttaaaa gaagggaaac 1440
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ccacactgcc ccccatattg gtacrcgcga caagtcaaac gctaggaagt ttgaataaaa 1560
ccaatttttc taacttggtt ctcatttggt gtaactcaat aaagcaaaga ctaaacattt 1620
ttataaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 1663
```

&lt;210&gt; 450

&lt;211&gt; 1380

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 450

```
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aaaaatgccag gaatgttctt ctctgctaac ccaaaggaat tgaaaggaac cactcattca 120
cttctagacg acaaaatgca aaaaaggagg ccaaagactt ttggaatgga tatgaaagca 180
tacctgagat ctatgatccc acatctggaa tctggaatga aatcttccaa gtccaaggat 240
gtactttctg ctgctgaagt aatgcaatgg tctcaatctc tggaaaaact tcttgccaac 300
caaactggtc aaaatgtctt tggaaagttc ctaaagtctg aattcagtga ggagaatatt 360
gagttctggc tggttgtgta agactataag aaaacagagt ctgatctttt gccctgtaaa 420
gcagaagaga tatataaagc atttgtgcat tcagatgctg ctaaacaat caatattgac 480
ttccgcactc gagaatctac agccaagaag attaaagcac caacccccac gtgttttgat 540
gaagcacaaa aagtcataata tactcttatg gaaaaggact cttatcccag gttcctcaaa 600
tcagatattt acttaaatct tctaaatgac ctgcaggcta atagcctaaa gtgactggtc 660
cctggctgaa gggaattaac agatagtatc aagcgcagaa ggaatgtgcc agtatggctc 720
cctgggtgaa cagcttggcc tttttgggt gtcttgacag gccagaaga acaaatgact 780
cagaatggat taacatgaaa gttatccagg cgcagagttg aagaagcata agcaagacaa 840
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tatgttttca aattgccatt gctactattg ctgtcgggtg ttattttatt ttattgtttt 1140
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tcagaatata tttgtaagtt aaatcattgg tgctaataat aaatgtggat tttgtattaa 1260
aatatataga agcaatttct gtttacatgt ccttgctact tttaaaaact tgcatttatt 1320
cctcagattt taaaaataaa taaataattc atttaaaaaa aaaaaaaaaa aaaactcgag 1380
```

&lt;210&gt; 451

&lt;211&gt; 926

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (687)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (865)

<223> n equals a,t,g, or c

<400> 451

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aaagaatgag actggtaata acaacaacaa agatggatct aatcataaag ctgaaagtgg 120
agctctaata gaagctgcaa aatcaaagat acatcagtac aaagtacgag cttatatcca 180
aatgaagtct ctgaaagcat gtaaaagggg aatcaagtca gtcatgaata cagctggaaa 240
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gcacaatttg ggaatattct actttaaaaa ggctctgcaa gagaatgaca atgtctgtgc 480
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gttactaacc aataagagat atgagttgct gtataactgt ggaattcagc ttcttcacat 600
tggaaggcct cttgctgcct tcgaatgtct gattgaagct gttcagggtt atcatgcaaa 660
tcctcgccctc tggctacggc tggctgnaat gctgcattgc tgccaataag gggacttctg 720
aacaagaaac taaaggcctt cccagcaaaa aaggaattgt acagtctatt gttggkcaag 780
gctatcatcg taaaaatggt ttggcatcac agtctataca gaatactgtt tatraatggt 840
ggggcagctc tcggccattc ctgtnagcca gtatgggagt tttgcagccc atatgttctc 900
agaaatgcct ggtttgcctg ttacct                                     926
```

<210> 452

<211> 1642

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (147)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (150)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1608)

<223> n equals a,t,g, or c

<400> 452

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gggctcacac ttacccgcgc ggagggancan cgccgggtg tccaccccca tcctgcgccc 180
agtctcctcg attccctcgc ctctgagccg ggagagccga acagctgaag agagttcact 240
gactccccag ccccggtgg gccttggtgca catcatgacc agttttgaag atgctgacac 300
agaagagaca gtaacttgtc tccagatgac gggtttacat cctggccagt tgcagtgtgg 360
aatatttcag tcaataagtt ttaacagaga gaaactccct tccagcgaag tggtgaaatt 420
tgcccgaaat tccaacatct gtcattatac ttttcaggac aaacagggtt cccgagttca 480
gttttctctg cagctgttta aaaaattcaa cagctcagtt ctctcctttg aaataaaaaa 540
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accaaattag aagtttgact tttatgtgtt atacacaatc ttaaaatttc acgaattcac 1560
ctttttaata gtatccatgt acataataaa atcaaagttt aattagcnaa aaaaaaaaaa 1620
aaaaaaaaaa aaaaaaaaaa aa 1642

```

&lt;210&gt; 453

&lt;211&gt; 2254

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 453

```

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gacatgcaga ggaccgcaga gcctcctgca cctragttct agactcaacg gtgctctgcg 120
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gaggatggca ttagcccccct gggttggtg ctggaccagt acctggagtg tcaggaagct 300
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cagttcgccc ggcacattga ccagcagatc cagggcagcc ggatcggtgg agcccaggaa 780
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gagatagcca ccacttttga gcattattac cagcactaca tggcggaccg tctcctgggc 900
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```

```

cgctccccc agcagatggt gcagagcctg agcacctcta aggagctgca gcgccagttc 1020
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gagtttgatt ataaaaaaaa aaaaaaaaaa aaaa 2254

```

<210> 454

<211> 1931

<212> DNA

<213> Homo sapiens

<400> 454

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gcgacggcga ccatagctct ccagggtcaat ggccagcaag gaggggggtc cgagccggcg 120
gcggcggcgg cagtgtgtgg agcgggagac aaatggaaac ctccacaggg cacagactcc 180
atcaagatgg agaacgggca gagcacagcc gccaaagctg ggctgcctcc cctgacgccc 240
gagcagcagg aggcccttca gaaggccaag aagtacgcca tggagcagag catcaagagt 300
gtgctggtga agcagacat cgcgcaccag cagcagcagc tcaccaacct gcagatggca 360
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cagcggggcg tggccatcat gtgccgcgtc tacgtgggct ctatctacta tgagctgggg 480
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```

<210> 455

<211> 771

<212> DNA

<213> Homo sapiens

<400> 455

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aatggtatgt gggggaaatg catcccctca gaggactgag gcatagtctc tcatctgcta 660
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<210> 456

<211> 1169

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (1164)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1167)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1169)

<223> n equals a,t,g, or c

&lt;400&gt; 456

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aaaaaaaaaa aaaaaaaaaa aaanaanan                                     1169

```

&lt;210&gt; 457

&lt;211&gt; 3249

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3234)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 457

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```



```
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tccacaact 3249
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<210> 458

<211> 1916

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1895)

<223> n equals a,t,g, or c

<220>

<221> misc feature

&lt;222&gt; (1902)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 458

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&lt;210&gt; 459

&lt;211&gt; 2773

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 459

```

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&lt;210&gt; 460

&lt;211&gt; 2031

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 460

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<210> 461

<211> 1839

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1496)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1832)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1839)

<223> n equals a,t,g, or c

<400> 461

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tctacagata atgcatgttt tacagtactc cagatgtcta cactcaataa aacatttgac 1740
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aaaaaaaaaa aaaaaaaacc ccgggggggg gnccccaan 1839
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<210> 462

<211> 779

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (26)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (731)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (737)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (759)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (762)  
<223> n equals a,t,g, or c

<400> 462  
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gagcgaggga agacaagcca ggcacgatgg ccaccttccc accagcaacc agcgccccc 180  
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catggacact acaccagca atagagacgg gactgcggag gaaggaggac ccaggacagg 480  
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gaggggctac caggaaagcg cctccaacc tagcaaaagt gcaagatggg gagtgagagg 600  
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<210> 463  
<211> 1717  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (5)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (27)  
<223> n equals a,t,g, or c

<400> 463  
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tagtcaaggg gaaaatacgc attttattac aggtcttaac atcaggcaac tttcaacttt 240  
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gtaaggaaga gaacaaccag tggattcagg ggacaattat ctatctccaa ataataggct 420  
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atcttgttts tttcgtgaga gatctcgcca tggcagcatc ttgttaagta agtgtaattg 540

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cgtggattcc atttgacca gtttactatc agttcagttc aggtagattt gggtcaactt 720
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<210> 464

<211> 828

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (787)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (819)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (827)

<223> n equals a,t,g, or c

<400> 464

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gaagccggta caggtgccct gcggacacgt cttttgctct gcatgcctgc aggaatgtct 180
gaagccgaag aagcctgtct gtggggtgtg tcgcagcgt ctggcacctg gcgtccgagc 240
cgtggagctc gagcggcaga tcgagagcac agagacttct tgccatggct gccgtaagaa 300
tttcttcctg tccaagatcc ggtcccacgt ggctacttgt tccaaatacc agaattacat 360
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ccgttacacc tttccttgtc cttactgtcc tgagaagaac tttgatcagg aaggacttgt 480
ggaacactgc aaattattcc atagcacgga taccaaactc gtggtttgtc cgatatgtgc 540
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ctcgatgccc tggggagacc ccaactaccg cagcgccaac ttcagagagc acatccagcg 600
ccggcaccgg ttttcttatg acacttttgt ggattatgat gttgatgaag aggacatgat 660
gaatcagggtg ttgcagcgct ccatcatcga ccagtgaagc gagtccgtgc ttgctatctg 720
tctcatgtta cagagcttcc attacatatt aaacgtgaaa tctatgaaaa aaaaaaaggg 780
ggggggnccc ggttacccca atttcggccc tattaggtna agtcgtna 828

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<210> 465

<211> 1173

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (137)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1166)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1168)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1171)

<223> n equals a,t,g, or c

<400> 465

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gcgtttcagg cccttgntca ctcaatgacc tccagttcct tagatacaac agtaaagaca 180
ggaagtctca gcccatggga ctctggagac aggtggaagg aatggaggat tggagcagg 240
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agaataacag aagcagcgga cattctggaa atattactat gatggaaagg actacattga 420
attcaacaaa gaaatcccag cctgggtccc ctctgaccca gcagcccaga taaccaagca 480
gaagtgggag gcagaaccag tctacgtgca gcgggccaag gcttacctgg aggaggagt 540
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tccctctgtg gtggtcacca gccaccaggc cccaggagaa aagaagaaac tgaagtgcct 660
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atttgagagc cgaagactgg gatgcctgtc ttgagtagac ttggacccaa aaaatcatct 1080
caccttgagc ccacccccac cccattgtct aatctgtaga agctaataaa taatcatccc 1140

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tccttgcccta gcaaaaaaaaa aaaaangngg ngg 1173

<210> 466

<211> 521

<212> DNA

<213> Homo sapiens

<400> 466

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tgctggacat gtcctacgag cagctgatgc agctgtacag tgcgcgccag gcggcggctg 180  
aaccggggcc tgcggcggaa gcagcactcc ctgctgaagc gcctgcgcaa ggccaagaag 240  
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gagatcaagc ccgagatgat cggccactac ctgggcgagt tctccatcac ctacaagccc 420  
gtaaagcatk gccggcccgc catcggggcc acccaactsct cccgmmtcat ccctctcaag 480  
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<210> 467

<211> 1428

<212> DNA

<213> Homo sapiens

<400> 467

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tgagcaccct tacctgacct catccccga atcccctgag cactggggcca gccctcacc 180  
tccctccctc tcagactggt ccgaatccac gcctagccca gccactgcca ctggggccat 240  
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ggcctgagac gctcgtcagt tcttagatct tgggggccta aagagacccc cgtcctgcct 420  
cctttctttc tctgtctctt ccttcctttt agtctttttc atcctcttct ctttccacca 480  
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cctctgcccc agccccaccc ttggccatct ccctttggga actagggggc tgcctgggtg 1140  
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gaatagttaa cactcaaaaa aaaaaaaaaa aaaaaacttg agggggggg 1428

<210> 468

<211> 3463

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1187)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 468

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ggagccatgg ccaccgctaa cggggccgtg gaaaacgggc agccggacag gaagccgccc 120
gccctgccgc gccccatccg caacctggag gtcaagttca ccaagatatt tatcaacaat 180
gaatggcacg aatccaagag tgggaaaaag ttgtctacat gtaacccttc aactcgggag 240
caaatatgtg aagtggaaga aggagataag cccgacgtgg acaaggctgt ggargctgca 300
caggttgccct tccagagggg ctcgccatgg cgccggtgg atgccctgag tcgtgggcgg 360
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acgatggata cagggaagcc atttcttcat gcttttttca tcgacctgga gggctgtatt 480
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gatgacaacg tgtgtgcttc accaggcatg agccatttgg tgtctgtggg gccatcactc 600
catggaactt cccctgctg atgtgtgtgt ggaagctggc acccgccctc tgctgtggga 660
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gaatgataaa ataaaattgg atatttgaga aaaaaaaaaa aaa 3463

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&lt;210&gt; 469

&lt;211&gt; 621

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 469

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ctggtgtacc aggggtctaa tcaggcctgt gtctgcctcc ttcttgaata gccagtgaa 180
ttcatctaaa cagccttccct acagcaactt cccactccag gtggccagac gggagttcca 240
gaccagtgtt gtctcccggg acattgacac agcagccaag tttattggtg ctggggcagc 300
cacagtttgt gtggctggtt caggggctgg cattggaacc gtgtttggca gcttgatcat 360
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gtgctggggg gtgttaagct ttaccattaa acacaacgtt tctctaaaaa aaaaaaaaaa 600
aaaaaaaaa aaaaaaaaaa a

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&lt;210&gt; 470

&lt;211&gt; 1833

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (126)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (386)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

<221> misc feature  
<222> (524)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1798)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1812)  
<223> n equals a,t,g, or c

<400> 470  
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<210> 471  
<211> 3202  
<212> DNA  
<213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (4)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (3160)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (3180)  
 <223> n equals a,t,g, or c

<400> 471  
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 ccgtagaggt ttggagagca acgtgaatgt tgaattactg aatgctttac atagtcacat 540  
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 taacaatttg gggcttttca ttaaccatta tcctaattggg gttgtcactg ttaattgtgc 660  
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 cgagatcatc aagccagcag agaaatccct ccatgaaaag ttaaaacaag ataagcgctt 1560  
 tagcaccttc ctacgctac ttgaagctgc agacttgaaa gagctcctga cacaacctgg 1620  
 agactggaca ttatttgtgc caaccaatga tgcttttaag ggaatgacta gtgaagaaaa 1680  
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 aaaagaatct gacatcatga caacaaatgg tgtaattcat gttgtagata aactcctcta 1920  
 tccagcagac acacctgttg gaaatgatca actgctggaa atacttaata aattaatcaa 1980  
 atacatccaa attaagtgtt ttcgtggtag caccttcaaa gaaatccccg tgactgtcta 2040

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taagccaatt attaaaaaat acacccaaaat cattgatgga gtgcctgtgg aaataactga 2100
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tttacgcggg gcatgccgac gt 3202

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&lt;210&gt; 472

&lt;211&gt; 941

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (927)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 472

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gttccaagt ccccttactg acccgagaga cgtcattgcc gcagaggag ctatgggagc 60
atataggtt taatgaaact gtagtctcag ttggaagcct agacatgaaa tgggtcagt 120
agcaaggctc tattcctagt ctccagccat gcctgtggca acctgagccc gctctcagca 180
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agatttcctc cttcattcta atttcagtgt ctaaaattct tgcattcrtg aacgagctgg 300
gcatttgatg agacagggcy gaatactgca gttttcctcc tagaaatcmt ctggggcatt 360
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tttgggataa cgatctacca gaatggggat atttcaccct tgggttctgag atgcaaacca 480
aagaatatca tgaccagctt tcaggcctcc tgaagtatat ctctcacatt gtcctgttct 540
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agaaggggaa gaagatcaaa gaagganaga agaaggggac g 941

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&lt;210&gt; 473

&lt;211&gt; 1279

400

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1144)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1273)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 473

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ggaatgagtg tgtggttgtc attaggggtg acaaagaaaa aggatatatt gatttgctca 120
aaagaagagt ttctccagag gaagcaatca aatgtgaaga caaattcaca aaatccaaaa 180
ctgtttatag cattcttcgt catgttgctg aggtgttaga atacaccaag gatgagcagc 240
tggaagcct attccagagg actgcctggg tctttgatga caagtacaag agacctggat 300
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atgtgaatga agatgaacgg gaagtactca ttaataatat taataggcgc ttgacccac 420
aggctgtcaa aattcgagca gatattgaag tggcttgta tggttatgaa ggcattgatg 480
ctgtaaaaga agccctaaga gcaggttga attgttctac agaaaacatg cccattaaga 540
ttaatctaata agctcctcct cggatgttaa tgactacgac aacctggag agaacagaag 600
gcctttctgt cctcagtcga gctatggctg ttatcaaaga gaagattgag gaaaagaggg 660
gtgtgttcaa tgttcaaata gagcccaaag tggtcacaga tacagatgag actgaacttg 720
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aacatcaaat aaatttctg gatatttaaa aaaaaaaaaa aaaaaggggg gggccttaa 1260
gaaccaagtt tantttggg 1279
```

&lt;210&gt; 474

&lt;211&gt; 3209

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (427)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 474

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caactcccg gacacatcct tcgagcagca tgtgctgtgg caacgggctg gaagggcggt 60
gacctggtct tgaactcctt ggcggaagag aagctgcarg ccagcgtgag gtgcttggct 120
acgcacgggtc gcttcctgga aattggcaaa ttcgaccttt ctcagaacca mccgctcggc 180
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atggctatct tcctgaagaa cgtgacatcc acggggtcct actggatgcg ttcttcaaac 240
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gtggtacggc ccctcaagtg cacggtgttc catggggccc aggtggagga cgccttccgc 360
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<210> 475  
<211> 833  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (9)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (15)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (58)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (73)  
<223> n equals a,t,g, or c

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gaggaaatggg attttaatgac cttttagtgcc aaccatgatg acagcgtgaa aaaaatcaaa 180  
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agtatatgtc ccaactctat gtttctttga ttctaacaca attaatgaag tgacatgatt 780  
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<210> 476  
<211> 1141  
<212> DNA  
<213> Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (11)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 476

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cagctggagt agagtttgaa gagaaattta taaaatctgc agaagatttg gacaagttaa 300
gaaatgatgg atatttgatg ttccagcaag tgccaatggt tgagattgat gggatgaagc 360
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g                                                                 1141

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&lt;210&gt; 477

&lt;211&gt; 1102

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 477

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<210> 478

<211> 4201

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (4077)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (4161)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (4186)

<223> n equals a,t,g, or c

<400> 478

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gctccccata ctagtccgcg atatttgag ttcttacaac atggcagaca tgacaacaa 180  
agaacagtct gaacttgatc aagatttgga tgatgttgaa gaagtagaag aagaggaaaac 240  
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c 4201

&lt;210&gt; 479

&lt;211&gt; 787

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> misc feature

<222> (780)

<223> n equals a,t,g, or c

<400> 479

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tggaggttgt agtaccgccc ccagagccaa ttttccactt ccgcktccgg cgtgcggca 180
gtccagatca aaaatggcgg tagttggtgt gtcctcgggt tctcggctgc tgggtcggtc 240
ccgcccacag ctggggcggc ctatgtcgag tggcgcccat ggcgaagagg gctcagctcg 300
catgtggaag actctcacct tcttcgtcgc gctccccggg gtggcagtcg gcatgctgaa 360
tgtgtacctg aagtcgcacc acggagagca cgagagaccc gagttcatcg cctaccccca 420
tctccgcatac aggaccaagc cgtttccctg gggagatggt aaccatactc tattccataa 480
ccctcatgtg aatccacttc caactggcta cgaagatgaa taaagagaat ctggaccact 540
acccgggcac cagggaccac agcactgggt tggaccgtta ctctgcacat ggaccagaaa 600
aagtatatgg gaccttaagc tcaccttctt tacttgatc aaatgatgac tgggtatactg 660
gtctcccatc ccttgcttg tggcaggaga tggcttaaat aaataactta aayttaaaaa 720
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaactn 780
ggggccg                                           787
```

<210> 480

<211> 731

<212> DNA

<213> Homo sapiens

<400> 480

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ccccagcag cccctccacc cctgcatgtt cccgctggcc actgcctact ccacgctcca 180
gctggtcacc aaccctacc aggccaccat tgatggagtc agattttttg ggacatcagg 240
acagaacgtg agtgacattt tccgatacag cagcatggag gatcacttgg agatcctgga 300
gtggaccctj cgggtccgtc acatcagccc cacagcccct gacactctag gttgttacct 360
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caccctcagc tttggctcca aaatcatccg aggtcctgag gaccagacag tgctgttggt 480
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ctgccagccc atcagcttct cgggcttcgg ggcagaggac gatgacctgg gaggccttgg 600
ctggggccct gactcaaaaa agtgggtttg accagagagg cccagatgga ggctgttcat 660
tccctgcagt gtcggcattg taaataaagc ctgagcactt gctgatgcga aaaaaaaaaa 720
aaaaaaaaaa a                                           731
```

<210> 481

<211> 1119

<212> DNA

<213> Homo sapiens

<400> 481

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ccccagtcct ccccaaccgc gcgtggcggc gccggctccc tagccaccgs ggccccaccc 180
tcttcgggcc tcagctgtcc gggctgcttt cgcctccgcc tgtggatgct gcgcctctcc 240
gaacgaaca tgaaggtgct ccttgccgcc gccctcatcg cggggctcgt cttcttctct 300
```

```

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ggaaaagactg ttccaaaaac agtggataat tttgtggcct tagctacagg agagaaagga 480
tttggtctaca aaaacagcaa attccatcgt gtaatcaagg acttcatgat ccagggcgga 540
gacttcacca ggggagatgg cacaggagga aagagcatct acggtgagcg cttccccgat 600
gagaacttca aactgaagca ctacgggcct ggctgggtga gcatggccaa cgcaggcaaa 660
gacaccaacg gctcccagtt cttcatcacg acagtcaaga cagcctggct agatggcaag 720
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aagacagaca gccgggataa acccctgaag gatgtgatca tcgcagactg cggcaagatc 840
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ataaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaagg 1119

```

&lt;210&gt; 482

&lt;211&gt; 2056

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (137)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 482

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gcgcccgggc ccgcgacccc cgcacccagc tccgcagacc ggcgggcgcg cgcgggctct 120
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cagggcgtgc ctaggacagt gcttcagcta cagcgtcccc aacaccttcc cacagtccac 360
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gctggagtgc ccgggccacg aggaggtgcc cagggtggac aagctggtgg agaagatcct 480
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```

```
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ctcatgaata aattccttca acgcaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2040
aaamaggggg gggccc                                     2056
```

&lt;210&gt; 483

&lt;211&gt; 887

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 483

```
tgctacaaat aggaaggaat tgtaataatg atatttggcc tctactttgt cttagctgtt 60
aaactgtttt tagtattttt gttaaatatt tgcaaaggga agcattttct acagaggata 120
attaatttca agaaaaatat cttgagtttt aagaaataaa catctccaga aaaggagaaa 180
gtcgatttta taaaatgtcg caactctcca acatttgggg tagtgactcc ttttttgta 240
ggacatttga aactagcaag cagccattgt ttctaaagaa ttctggcttc acattgactc 300
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attctattat agtgttattt aatatgtaaa ttgtattgct atacataaaa taaagtatgg 840
tttttgatgt aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aataaaa                                     887
```

&lt;210&gt; 484

&lt;211&gt; 1878

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1446)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 484

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actatgagcc cgaggecttc cctctcccca gagcgagag gctttgaagg ctacctctgg 120
gaagccgctc accgtcggaa gctgcgggag ctgaaactgc gccatcgtca ctgtcggcgg 180
ccatgacacc gctcgytcc cgctgaktc gtctgtgggc catcatgagg aagccacgag 240
cagccgtggg aagtggtcac aggaagcagg cagccagcca ggaaggaggg cagaagcatg 300
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```

```

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aaaaaaaaa aaaaaaaa 1878

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&lt;210&gt; 485

&lt;211&gt; 1566

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 485

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aaaatt                                           1566
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&lt;210&gt; 486

&lt;211&gt; 3046

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 486

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ttacacttaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 3046

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&lt;210&gt; 487

&lt;211&gt; 1904

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 487

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tccaataaaa tgtacacccc tcaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1860
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1904

```

<210> 488

<211> 827

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (826)

<223> n equals a,t,g, or c

<400> 488

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gggggcttct gggcctgctg agctccctcc acacacctca agcccatgc cgtgctcatc 720
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaana 827

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<210> 489

<211> 1926

<212> DNA

<213> Homo sapiens

<400> 489

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aaacatcact gaaatttcaa taaattttta ttgaaatgtc aaaaaaaaaa aaaaaagggc 1920  
ggccgc 1926

<210> 490

<211> 1461

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1432)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1452)

<223> n equals a,t,g, or c

<400> 490

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aagtggccgt agcggcttgt tggataagt gaaagatagat gataagcctg taaaaattga 180  
caagtgggat ggtacagctg tgaaaaactc tttggatgat tctgccaaa aggtacttct 240  
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aatctcctgt ttctttgcca tagtggtttt gatttgggat tatatgcacc cttttccaga 360  
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ttatccctag gnggtattt a 1461

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&lt;210&gt; 491

&lt;211&gt; 805

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (20)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 491

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aaaaaaaaa aaaaaaaaaa aaaaaa 805

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&lt;210&gt; 492

&lt;211&gt; 2269

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 492

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&lt;210&gt; 493

&lt;211&gt; 4108

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 493

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<211> 2209

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

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<223> n equals a,t,g, or c

<400> 494

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&lt;210&gt; 495

&lt;211&gt; 1677

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 495

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&lt;210&gt; 496

&lt;211&gt; 1702

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1691)

&lt;223&gt; n equals a,t,g, or c

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<222> (1701)

<223> n equals a,t,g, or c

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<212> DNA

<213> Homo sapiens

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tttattcatt ttattagatt tattctaaaa ttttttaaat gtaaatctt aaactgtgga 2220  
aaccactgaa ggtgcttatt aactgttctc ccagatttgt acaagtattg gatgattcct 2280  
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aaaaaaaaaa aaanaaaaaa aaaaaaaaaa aaaann

2376

&lt;210&gt; 498

&lt;211&gt; 840

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (840)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 498

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gacgaccgc gagaagacat gccactgtt gctacgggtc ttcaccacca ataacggccg 180
ccaccaccga atggacgagt tctcccggg aaatgtaccg tccagcgagt tgcagatcta 240
cacttggatg gatgcaacyt tgaaagaact gacaagctta gtaaaagaag tctaccaga 300
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catgacctg cagtcgcaga agttccagat aggagattac ttggacatag caattacccc 480
tccaaatcgg gcaccacctc cttcagggcg catgagacca tattaattc tatttactat 540
ttgttgaatt tatttttccg tcagttatgt aaaataaaca tactcttctt cctcccctga 600
ttattgccat taagccttta aattctaaac aaattataat gcatcatcta tttaggagtt 660
agatttggat gtgctattgt atgattacga atagtctgta tgtttcaagc cttctgtaa 720
aatatgaaga aaagtgtctt tagcattctg tgtaaaactg tactgttaa tatatgtgtg 780
taatcaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 840
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&lt;210&gt; 499

&lt;211&gt; 461

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (452)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (455)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 499

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cgccatgtct tctcacaaga ctttcaggat taagcgattc ctggccaaga aacaaaagca 120
aaatcgctcc attccccagt ggattcggat gaaaactgga aataaaatca ggtacaactc 180
caaaaggaga cattggagaa gaaccaagct gggctataa ggaattgcac atgagatggc 240
acacatattt atgctgtctg aaggtcacga tcatgttacc atatcaagct gaaaatgtca 300
ccactatctg gagatttcga cgtgttttcc tctctgaatc tgttatgaac acgttggttg 360
gttggtattc gtaataaata tgtaaggcct ttcyttttta aaaaaaaaaa aaaaacyyrr 420
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ggggggggccc gggtcccaat cccccctatt tnaanccct t

461

<210> 500

<211> 2782

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2620)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2641)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2643)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2712)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2742)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2759)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2779)

<223> n equals a,t,g, or c

<400> 500

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cgaacctaca tcatcagtat cctcttcaag tctatctttg aggtggcctt cttgctgac 180  
cagtgggtaca tctatggatt cagcttgagt gctgtttaca cttgcaaaag agatccctgc 240  
ccacatcagg tggactgttt cctctctcgc cccacggaga aaaccatctt catcatcttc 300  
atgctggtgg tgtccttggt gtccctggcc ttgaatatca ttgaactctt ctatgttttc 360  
ttcaagggcg ttaaggatcg ggtaaggga aagagcgacc cttaccatgc gaccagtgg 420  
gcgctgagcc ctgccaaaga ctgtgggtct caaaaatatg cttattttcaa tggctgctcc 480

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ngncatttgt ttaaagtcag aggattatct aaaagccagt ttcccagtc atttgatat 2700
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<210> 501

<211> 1249

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

<400> 501

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agtttttgat cctgttgaaac ccgcctgaga cgggtgctgtg aggggaaagc cttccgcacc 180
cacacaggaa ttctgctgag gtcccccttc cttccggcca atggcagaag tgggggaaaa 240
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gacgcaggga ctaggacggc ccggtgaccg cgcggattca ggattgcggg gacgcagaaa 780
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<210> 502

<211> 1358

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1334)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1347)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1349)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1351)

<223> n equals a,t,g, or c

<400> 502

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tatccacttt tctyggataa tcaggagggtg cccagtsgt cacagtgtgg cattccgagt 120
tggggcgggt ggtcgggtca agatagcagc agcagggtgtc agggctcaag acaccacccc 180
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ttggcgctctg tractaaagg gacgctggat tgctcaggtc agctgctcgg ggctcccagg 360
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ccaccgggt tccgactgt ccgaccctg cacaccactc atgtcaccac ggcgtgcac 780
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tgttctccaa aaanaaaaaa aaaaaancnt nggagggc 1358
```

<210> 503

<211> 501

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (457)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (492)

<223> n equals a,t,g, or c

<400> 503

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atagcgctca cgcaagcatg gtaaacgtcc ctaaaacccg ccggactttc tgtaagaagt 120
gtggcaagca ccaaccccat aaagtgcac agtacaagaa gggcaaggat tctctgtacg 180
cccagggaaa gcggcggttat gacaggaagc agagtggcta tggtagggcaa actaagccga 240
ttttccggaa aaaggctaaa actacaaaga agattgtgct aaggcttgag tgcgttgagc 300
ccaactgcag atctaagaga atgctggcta ttaaaagatg caagcatttt gaactgggag 360
gagataagaa gagaaagggc caagtgatcc agttctaagt gtcattttt attatgaaga 420
caataaaatc ttgagtttat gttcaaaaaa aaaaaanggg gggggcccg taccawtcg 480
cctatagggg gncgtttaa a 501
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<210> 504

<211> 2011

<212> DNA

<213> Homo sapiens



<220>  
<221> misc feature  
<222> (1941)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1961)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1974)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1976)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2002)  
<223> n equals a,t,g, or c

<400> 504  
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agaatcattg agggcttatt ttgtatacca actgctaaac tagatgcttc atacattgtt 180  
gtcaatactc atgacagcct tgtaaagtag aaawtaattc ttccagttaa cackaaggct 240  
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actaaaagca gctcaaagta aatattaata tattaattcc attgctatct ggataaccac 540  
tcaactttcc tgctgaaaat gccatttaa tttaaagaagg ttggatagag ctctctatat 600  
gcattttgga caggcagggg tttcagggtca taaacattct gatgagttaa tataaaataa 660  
gagaaactgt aaatttccac tactaaaaat cacaaaaata acagaaacaa aagaagagat 720  
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tgatccacca taatcaaaat aattaaacatt tatccagtgc ctactatgta ctattccctg 1380  
tcctgtttta catttactca tttaaagtcc ataagaaaca ttaaattctca tctgccttct 1440

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agccaacacc ggaattatca tngggcccaa a 2011

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&lt;210&gt; 505

&lt;211&gt; 1989

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1917)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 505

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ttaatgaatt aaaatatttg ttaaccaact ttaaagtcag tcctgtgtat acctagatat 1860  
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cctgggattc tctgcccccy ctgagtarag tgtgtgggr taaaggaatc tytcaggggc 1980  
agggggctt 1989

<210> 506

<211> 1085

<212> DNA

<213> Homo sapiens

<400> 506

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ggaatgacat cttacgcaa aagggtatct tccccccaa ggaaagtctg aaagaattgg 180  
aagaggaggc agaagaggag cagcgcattc tccagcagtc agtggtgaaa acatatgaag 240  
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ctattgaaat gtacagacgg cggagactgg ctgagtggaa agcaactaaa ctgaagaata 360  
aattyggaga agttttggag atctcaggga aggattatgt tcaagaagtt accaaagctg 420  
gcgagggtt gtgggtcatc ttgcacctt acaacaagg aattcccctc tgtgccctga 480  
taaatcagca cctcagtggg cttgccagga agtttctctga tgtcaaattt atcaaagcca 540  
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caagagatga gttggaatgg aaactgtctg aatctggagc aattatgaca gacctggagg 720  
aaaaccctaa gaagccgatt gaagacgtgt tgctgtcctc agtgcggcgc tctgtcctca 780  
tgaagaggga cagcgtattc gaggtgact gaggtacag cttctatcac atgccgaact 840  
ttcttgtgac aaattgtctg gattttttaa aaaaggaaaa agcaagaatg aatccttgtg 900  
gttttttagtt ttgtataaat tatgtttcaa atctttacat tttgaaaata atcattgtg 960  
gagattctgt taaatatttt ggaactcttt tttttttaa ttatagtatt tcctctaaaa 1020  
aaaattaaaa ccagccattt gtatggcaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1080  
aaaaa 1085

<210> 507

<211> 1485

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (570)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1475)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1476)

<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1485)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 507

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tgcgtcctcc ccgctgcct ccgctgctcc cgacgcggag cccggagccc gcgccgagcc 120
cctggcctcg cggtgccatg ctgccccggc ggcggcgctg aaggatggcg acgccgctgc 180
ctccgcccctc ccgcgggcac ctgcggtgct tgcggctgct gctctccggc ctgctcctcg 240
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cggagcctgc caccctgggc ttctcgccan gggggcaggg gctggakctg ggcctccctc 600
ccactccagg aacccccacg ccacgcccc acacctccct gggtccctc gtgtcatccg 660
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cggagatgta ccactaccag caccaacggc aacagatgct gtgcctggag cggcataaag 960
agccacccaa ggagctggac acggcctcct cggatgagga gaatgaggac ggagacttca 1020
cgggtgtacg gtgcccggc ctggccccga ccggggaaat ggaggtgcgc aacctctgt 1080
tcgaccacgc cgcactgtcc gcgcccctgc cggccccag ctaccgcct gactgccat 1140
gacctggagg cagacagacg cccacctgct ccccgacctc gaggccccg gggaggggca 1200
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cctggtcccc tgcacctctc ctgtygggt tagaccccc aactggaggg ggcatggaga 1380
accgtagagc gcaggaacgg gtgggtaatt ctgagacaa aagccaatta aagtccattt 1440
cagacctgcg gaaaaaaaa aaaaaaaaa aaacnngggg ggggn 1485
```

&lt;210&gt; 508

&lt;211&gt; 1930

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (30)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 508

```
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ttatttgtaa aaagatgagg acacacatta artgawgtca gcatttttagt aaacttttag 120
acaaaatttg ttaggtcat tcatgaaaac tttaatacta aaagcacttt ccattatata 180
ctttttaaaag gtctagataa ttttgaacca atttattatt gtgtactgag gagaaataat 240
gtatagtaga ggacagcctt ggtttgtaaa gctcagttcc actagttcat ggttttgtgc 300
aacttctgag cctcagtttt ctcttttgca aattaataat tacatacctt tatagatttt 360
gaaattaatt taaatattag tatttggtag atgaaggctt aatgttaagt ttcctttaat 420
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gatccacaat aatccctttg atcacgtaa tctaaatcta gatgtctttg tctaattttt 480
tttgaatagc agttataaat gtaaaggact caaagtttaa gtaaaaagtg atactccacc 540
ttgtgtttca aagaatttag ttccacctct tcataccagt ttaacactta atatatattca 600
ttggatttta gacagggcaa aaggaagaac aggggcctct ggaggccctt ggttatttaa 660
atcttggatt atttgtgata gtaatcacaa atttttggct aatttttaac ctgaggtttt 720
gttttttttt taaaggaat gcagcctagt cttgagaaca taattttata taatcaatta 780
ctaaatgtta aactattacc acacagccca taaaacagca tttgcgttta ttgagagaga 840
ggatgtgcca tcatgattaa tgaaaactat cttttgagtt tgaaaagaaa ttaatttgca 900
gtgtttggat tgtatatatg gtgctaaaaa taaattaatt tactttataa acctatctg 960
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ggctaattat aggaatgcct ataatacatc ttgattcct tatatctaata aagagttcaa 1080
agagttatga gttgaagtct tgaatgcagg aaactatctg atagtgttct aaaatttggt 1140
tacttgggtt tggataccct tagtgggatg atgtaaatag aggctagcta cctaggcttg 1200
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gagtaccgga ccggttgcca tgattaagag agaatgcttt ctattggagt ttcaggaaat 1680
ataatttgag aatactttaa agggaagtgg aagtataagt gaatgatatt tttcttttac 1740
atgtaaacia tgaagtatt tcaaagttaa gttttaaaca aaatacatga agtagtgtct 1800
gccatacatg ttaatattct acattcttgc ttccttaaat taatatgttt gtgtgtatat 1860
atgtgcctca cacctgaatt gaaaattaaa gactggttta aaagtgaaaa aaaaaaaaaa 1920
aaaaaaaaat                                     1930

```

<210> 509

<211> 1134

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (895)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1041)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1064)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1090)

<223> n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1106)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 509

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gcagtttacg cggaagattc agagcccgag tctgatggcg aggctggaat cgaggcggtg 120
ggcagcgcgg ctgaggagaa aggcggattg gtatctgatg cctatgggga ggatgacttt 180
tctcgtctag ggggtgatga agatggttat gaagaagaag aagatgagaa cagtagacag 240
tcggaagatg acgattcaga gactgaaaaa cctgaggctg atgacccaaa ggataatata 300
gaagcagaaa agcgagaccc ccaggaaactc gtggcctcct tttctgaaag agttcggaac 360
atgtcgcctg atgaaatcaa gatcccgcca gaacccctg gcagatgttc aaatcacttg 420
caagacaaga tccagaagct ttatgaacga aagataaagg agggaatgga tatgaactac 480
attatccaaa ggaagaaaga atttcggaac cctagcatct acgagaagct gatccagttc 540
tgtgccattg acgagcttgg caccaactac ccaaaggata tgtttgatcc ccatggctgg 600
tctgaggact cctactatga ggcattagcc aaggcccaga aaattgagat ggacaaattg 660
gaaaaggcca aaaaggagcg aacaaaaatt gagtttgtga cgggcaccaa aaaaggcacc 720
acgaccaacg ccacgtccac caccactacc actgccagca cagctgttgc agatgctcag 780
aagagaaaga gcaagtggga ttcggctatc ccagtgacaa cgattagccc agcccaccat 840
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aaggaccacc gtcatctctg ctgtggggca ccattgtgaa gaaggccaag cagtgcctg 960
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gggagggcg ccatTTTTgt nttatttttc agggatttgg ggancattat tccccaggtt 1080
gcccaacttn agggaggagt ttttntttt tgggcttttc caggttgga aggg 1134

```

&lt;210&gt; 510

&lt;211&gt; 1382

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 510

```

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cctcttgggg agtgacagtg cccactctg ttaagtccca tgccctgccc caactcagct 120
tcagccacaa tgatgtagcc tcttttcctt tccatccaca gggcacctgg cctgggtgga 180
gccactcct cagcaccac ctcacttctt gcagtattct gcagacccca gccctgtgcc 240
tgtgctcctg gacagctgga gataaggagt gggccctgga agatgctcat tcaggccctg 300
ctcaagattc cagtctgat tgctggactc gctgaagara gactacgcag gaaagcccca 360
gccacccatc aaatcagaga gaaggaaatc accttcttac gctatggcag gtaagaaagt 420
actcattgtc tatgcacacc aggaacccaa gtctttcaac ggatccttga agaattgtggc 480
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ctttgagccg agggccacag acaaagatat cactgggtact ctttctaata ctgaggtttt 600
caattatgga gtggaacccc acgaagccta caagcaaagg tctctggcta gcgacatcac 660
tgatgagcag aaaaagggtc gggaggtgga cctagtgata ttccagttcc cgctgtactg 720
gttcagcgtg ccggccatcc tgaagggtg gatggatagg gtgctgtgcc agggctttgc 780
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ccctcagatc agctttgtct ctgaaattgc atccgaagaa gaaagaaagg ggatggtggc 1020
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ctggcacttc gggcaataac tctgtggcac gtgggcatca cgtaagcagc acactaggag 1140
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ctggggatac ttttttcttt ctgttttttg tttgttttta attttagctt taaggagcac 1260
atggccagta ctgtttcagg ggaatattgg gtggcgctgg ggtttgggct tctattgac 1320
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cc

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<210> 511

<211> 1741

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1696)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1710)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1715)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1717)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1720)

<223> n equals a,t,g, or c

<400> 511

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aactatccaa gccacctatt ttatttgttc tttcatctgt gactgcttgc tgactttatc 60
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tgtacttgct cagctcaact gcatttcagt tgtattatag tccagttctt atcaacatta 180
aaacctatag caatcatttc aaatctattc tgcaaattgt ataagaataa agttagaatt 240
aacaatttta ttttgtacaa cagtgggaatt ttctgtcatg gataatgtgc ttgagtccct 300
ataatctata gacatgtgat agcaaaagaa acaaacaaaa gccaggaaaa cactcatttt 360
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ttggttttcc ttttttgttc tgggtggaagc atgtgcagga gacatatcat ccaaacataa 480
accattaaaa tgtttgtggt ttgcttggtt gtaattttca aagtagttaa ttgaggacaa 540
agggtaatgc agaagtata gctttgggtt gctgagtcct gttttaagtg gccttgatat 600
ttaaaactat tcctgccacc atttcttctc cttggccact tcttccttgc gtctccctgc 660
atgctgcttt atttgcttct ccctcccaa ccacctcatg gtatatttaa gagtgaagg 720
gacaaactag taggtttgtc aagtttaata taaagcactg atgtaacttg ctaggtaaac 780

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ttctgctttt cctcctctct tkgttccctt cckgtctatc cattgagttt atgaaatgga 960
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ctgtgtcgtg aatagcattt taatgacctc ttggctcaca taagcaaaca acatagggac 1620
gtatctgcta tgaaaatcca caaattttct agatagtgcc ctaaaaacaa ttttatatgc 1680
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<210> 512

<211> 1530

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1342)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1444)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1488)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1508)

<223> n equals a,t,g, or c

<400> 512

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cggcagtgag ggcggccggg cccctaagcg gctcaagact gacaacgccg gcgaccagca 180
cggaggcggc ggcggtggcg gtggaggagc cggggcggcg ggcggcggcg gcggtgggga 240
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tgacggtgtg gtggaagcag accttgtgga ggccttgagc gagtttgagc ccatcagcta 360
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```



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cgtgaacagt gtgcttctct ttaccatcct gaacccatt tattcgatca ccacggatgt 600
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<210> 513

<211> 2999

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (243)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2606)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2996)

<223> n equals a,t,g, or c

<400> 513

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ctggcaatct tttccgtttt tttgttttct gttttccatt cgcatgcccc ttagcgtaac 180
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ganaaactct gaaacggaca agatggctgc cacctcttcg cgctcttag tcccaccac 300
tcaggggcga ggtctgcgtc atgtgacct ccccttcttg gctccgctcc taccgcagt 360
cttgacggga ggcggacggg gaacgaggcc gtcggcattt tgtgtctgct tcctgtggga 420
cgtggtgta gccgttgggt tgggaaagt agggattttt ggctcgttt ctcctgcttc 480
ttttctctc ccttttactt tgccggtaga acacagttat gggtcgcaag aagaagaagc 540
agctgaagcc gtggtgctgg tattgtaata gagattttga tgatgagaag atccttattc 600
```

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agcaccaaaa agcaaagcat tttaaatgcc atatatgtca caagaaattg tatacaggac 660
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caatacctgg aagaacagac atagagttgg aaatatatgg tatggaagggt attccagaaa 780
aagacatgga tgaaagacga cgacttcttg aacagaaaac acaagaaagt caaaaaaaga 840
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tgccacctgg accaggaata ccacctctga tgcctggaat gccaccagggt atgccccac 1200
ctgttccacg tcctggaatt cctccaatga ctcaagcaca ggctgtttca gcgccaggta 1260
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&lt;210&gt; 514

&lt;211&gt; 2048

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 514

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<210> 515

<211> 3300

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (126)

<223> n equals a,t,g, or c

&lt;400&gt; 515

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<210> 516

<211> 3425

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (402)

<223> n equals a,t,g, or c

<400> 516

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<211> 1358

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

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<220>

<221> misc feature

<222> (1356)

<223> n equals a,t,g, or c

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<210> 518

<211> 1368

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

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<220>

<221> misc feature

<222> (1311)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1333)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1335)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1347)

<223> n equals a,t,g, or c

<400> 518

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&lt;210&gt; 519

&lt;211&gt; 933

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 519

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aaaaaaaaaa aaaaaactcg agggggggcc cgg 933

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&lt;210&gt; 520

&lt;211&gt; 1430

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (104)

&lt;223&gt; n equals a,t,g, or c



<220>  
<221> misc feature  
<222> (105)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1428)  
<223> n equals a,t,g, or c

<400> 520  
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c t g t c t c a g g a g a t g a a t t g a t g a c c c t g g c t c a t a a a c a c a t n n t c a a g a c t g t g g a t t 120  
t c a c g c a g g a t a g t a a t t a t t t g t t a a c c g g g g a c a g g a t a a a c t g t t a c g c a t a t a t g 180  
a c t t g a a c a a a c c t g a a g c a g a a c c t a a g g a a t t a g t g g t c a t a c t t c t g g t a t a a a a a 240  
a a g c t c t g t g t g c a g t g a g g a t a a a c a g a t t c t c t t t t c t g c t g a t g a c a a a a c t g t t c g a c 300  
t t t g g g a t c a t g c t a c t a t g a c a g a a g t g a a a t c t c t a a a t t t t a a t a t g t c t g t t a g t a 360  
g t a t g g a a t a t a t t c c t g a g g g a g a t t t t g g t t a t a a c t t a t g g a c g a t c t a t t g c t t 420  
t t c a t a g t g c a g t a a g t t t g g a c c c a a t t a a a t c c t t t g a a g c t c c t g c a a c c a t c a a t t 480  
c t g c a t c t c t t c a t c c t g a g a a g a a t t t c t t g t t g c a g g c g g t g a a g a t t t t a a a c t t t 540  
a t a a g t a t g a t t a t a a t a g t g g a g a a g a a t t a g a a t c c t a c a a g g g a c a c t t t g g t c c t a 600  
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a g g a g c t a g a a g a a t t g c t t c a g a g a a t t c a g a t t g c a t c t t t c c t t c a g c t c c t g a t g 840  
t t a a g g c c t g a g c g t c a a t c a t a t g t t g c a g t a g t a t a c a a c t g a c t a a a a c a a g c a a g 900  
c a g a g a a a a g c a t c a g c c t t c c a g a g t t a c t g t c t g c t t a a g g c a g a a a c a g c a g t a a a t 960  
a a t g a g g a a a a t g a a t t a g c t c c a g t g c t g a a c a a c t a a c t a a c t t g g t g t t a c c t g t a 1020  
a g t g a a a a c t c a a g t g t c a g a t g a a g g g a g t g g a g t t a t c c t c t t a t a g t a c a g t g g c c 1080  
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c t t a a a g c a g a a t g c c t t t t t t t t g c t t c a g t t g t a a g a a g a g g g a a t a c a t g a t 1260  
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a 1430

<210> 521  
<211> 1169  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1159)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (1166)  
<223> n equals a,t,g, or c

&lt;400&gt; 521

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aatcagttta tggagagaag agagtctcga tttcggaagg agatgacaaa attgagtacc 480
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arggggggcc gctaggggnt ccaagntta                                     1169
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&lt;210&gt; 522

&lt;211&gt; 2162

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (169)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2133)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2136)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2139)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 522

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cgccacagc cgcccgacgg cgccagaga gcgcgcgcc cgacggccg cgccagccc 120
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<210> 523

<211> 799

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (443)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (758)

<223> n equals a,t,g, or c

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ctttgtaaaag tcctgtaaga tcctgtctcc ttgccatga cgctgcaagg tcataaagta 180  
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aggacaccaa actgcagggc cccttyttca cccctaacca gcaggaaagta gccagaacgg 720  
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gaggtgcccc attgggttt 799

<210> 524

<211> 1722

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (13)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (40)

<223> n equals a,t,g, or c

<400> 524

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yacagatggg accatgaact ccggacacag cttcagccag accccctcgg cctccttcca 180  
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caacatgaag ctggaaagcc gcatcctgaa atggcaccag cagagagatc ctggcagtaa 480  
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ggaaggaatg aggaaagagc tcattctcat gaagaagcac catgagcagg aaatggagaa 780  
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&lt;210&gt; 525

&lt;211&gt; 562

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (515)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (526)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (557)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 525

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ctkgaagccc gaagaanggc gg 562

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&lt;210&gt; 526

&lt;211&gt; 2023

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (12)

<223> n equals a,t,g, or c

<400> 526

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cacgatctgt atatagtaca tcaaacttag aggtgtgacc ttaaatttaa ctttttttaa 1920
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<210> 527

<211> 2847

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (286)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (290)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2842)

<223> n equals a,t,g, or c

<400> 527

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tgtaaatggt cttttaatta attaaaaaga aattagtcag ctacaagcat gaacatgtgg 180
aacgcttacc ttgtactag gcgtttttgt tttgtttta atggcttttg gaattattata 240
gtattaacat ctggaaaact aggtaaatth atcttagaat taagtnttn gctccttttt 300
tgcagaaaaa gaacagcaag aagcgattga acacattgat gaagtacaaa atgaaataga 360
cagacttaat gaacaagcca gtgaggagat tttgaaagta gaacagaaat ataacaaact 420
ccgccaacca ttttttcaga agaggtcaga attgatcgcc aaaatcccaa atttttgggt 480
aacaacattt gtcaaccatc cacaagtgtc tgcactgctt ggggaggaag atgaagaggc 540
actgcattat ttgaccagag ttgaagtgc acgaatttgaa gatattaaat caggttacag 600
aatagatttt tattttgatg aaaatcctta ctttgaaaat aaagtctctt ccaaagaatt 660
tcatctgaat gagagtgtgt atccatcttc gaagtccacc gaaatcaaat ggaaatctgg 720
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ttcacatcat ttgggatacc agatagctca atactctctg agtacattgt gcccttgatt 2220
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```

```

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```

<210> 528

<211> 816

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (8)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (94)

<223> n equals a,t,g, or c

<400> 528

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gctatcctat tggctatcgg gacaaaattt gcttgagcca atccaaagtg ctccgtggac 180
aatcgccggt ctgtctataa aaaggtgaag cagcggcggt ttccggcgact ttcccgatcg 240
ccaggcagga gtttctctcg gtgactacta tcgctgtcat gtctggctcg ggcaagcaag 300
gaggcaaggc ccgcgccaaag gccaaagtcg gctcgtcccg cgctggcctt cagttccccg 360
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ccgtctacat ggctgcggtc ctcgagtatc tgaccgccga gatcctggag ctggcgggca 480
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gcaacgacga ggaactgaac aagctgctgg gcaaagtcac catcgcccag ggcggcgctc 600
tgcctaacat ccaggccgta ctgctcccta agaagacgga gagtcaccac aaggcaaagg 660
gcaagtgagg ctgacgtccg cccaagtggc ccagcccggc ccgcgtctcg aaggggcacc 720
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gctggcaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 816

```

<210> 529

<211> 885

<212> DNA

<213> Homo sapiens



&lt;400&gt; 529

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atcgtgcgcc gagggccgcg aggggtcgcc gccagatcc caccagccag caagctaaag 180
catggcggcc atcccctcca ggggtctcgt cgtggccacc cagactact accggcgccg 240
cctgggttcc acttccagca acagctcctg cagcagtacc gagggtccc gggaagccat 300
tccccacccc ccaggtctcc ccaaggtga cccgggtcat tgggtggcca gcttcttttt 360
cggaagtcc accctcccgt tcatggccac ggtgttgag tccgcagagc actcggaacc 420
tccccaggcc tccagcagca tgaccgctg tggcctggct cgggacgccc cgaggaagca 480
gcccggcggt cagtccagca cagccagcg cgggccccg tcctgacctg agcggttacc 540
accagcccca ggcctgcgga ggcgctagtc caccagagcc cctycccgc cctctcccca 600
ctccgcatcc ctgcaccccc tccccacctc ccacccccca ccctgtaaac taggcggctg 660
cagcaagcag accttcgcat caacacagca gacacaaaa accagtgaga gccccgctct 720
ctaccgcccg gccccagcac tcgctagctt tcctgacacc tggaactgtg cacctggcac 780
caagcggaat ataaactcca agcagccagt agccccgatg gtgtgtgcct gagctgtgtg 840
gcccgagggt ccaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 885
```

&lt;210&gt; 530

&lt;211&gt; 742

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (693)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (695)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (715)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (730)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (741)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 530

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ggtacctgac agtaccggtc ggaattcccc ggtcgacca cgcgtccgct gctgctctta 60
aaggtagcag cctcagggtc cctgctgtag acggggcggg ggagagtacg atgggtgggg 120
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```

cgtggtgggt cgtagggcgc tcgagatgga gccccagct tccttgatgg atcgcggggc 180
gcgagtgcc tagacaagcc ggagctggga ccggcaatcg ggcgttgatc cttgtcacct 240
gtcgcagacc ctcacccctc ccgtgggagc cccctttgga cactctatga ccctggaccc 300
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cgcattggaa gaacgcggtg ggcttctggc tgctgggcct ttgcaacaac ttctcttatg 480
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```

<210> 531

<211> 525

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (502)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (510)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (523)

<223> n equals a,t,g, or c

<400> 531

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cgarccctcg gtggtcctca gggagggctc ctgcggcaga acacgtggat gccacccac 120
cactgagcct catggagggt gtaacatttg gcgatgtggc tgtgcacttc tctcgggagg 180
agtggcagtg tctggaccct ggccagaggg ccctctacag ggaagtgatg ctggagaacc 240
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caargacctc caagacagggt gaggttaga tcccatcgca gagaagccct ggggtgarga 420
gaaactkcar gaggggctca caactgtrgg tagctgtagg tgartcgcg gggctacact 480
kggatgcctg ggaatgctac tnggggaaan cagcatccaa canct 525

```

<210> 532

<211> 1925

<212> DNA

<213> Homo sapiens

<400> 532

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gtggtctgag gccggtacag ctgcgcgtct gcgggaatag gtgcagcggg cccttgggcg 60
gggactctga gggaggagct ggggacggcg accctaggag agttctttgg ggtgactttc 120

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aagatggact ctactctaac agcaagtga atccggcagc gatttataga tttcttcaag 180
aggaacgagc atacgtatgt tcactcgtct gccaccatcc cattggatga cccactttg 240
ctcttttgcca atgcaggcat gaaccagttt aaacccattt tcctgaacac aattgaccca 300
tctcacccca tggcaaaagct gagcagagct gccaataccc agaagtgcac ccgggctggg 360
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gattacctga ggaagaagag atcaaggaaa aaaaaccac cagtcaagga aagtcaagta 900
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ttttcttttg ttactgttct tgctgctaga acttttttaa ataaactttt tttcaatgtg 1860
aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaagggg 1920
ggggg                                           1925
```

<210> 533

<211> 502

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (469)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (482)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (487)

<223> n equals a,t,g, or c

&lt;400&gt; 533

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catagaggca aacggtacac tgacagtacc gtccggaatt cccgggtcga cccacgcgtc 60
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tcgctccacc ttctccacca actaccggtc cctgggctct gtccaggcgc ccagctacgg 180
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gatctccgtg tcccgtcca ccagcttcag gggcggcatg ggggtccggg gcctggccac 300
cgggatagcc gggggtctgg caggaatggg agcatccaga acgagaagga gaccatgcaa 360
aagctgaacg accgcctggc ctcttacctg gacaaaatga aggagcctgg agaccgagaa 420
accggagggt ggaagcaaaa aaccgggag cactttggag aagaagganc ccaggtcaga 480
gnctggnagc cattaattca ag

```

502

&lt;210&gt; 534

&lt;211&gt; 1800

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 534

```

tcgaccacag cgtccggccg cgcgcgccac tgccaggcgg ggatcgggag gcgcgagctg 60
aggttggtgag ggactagctc ccggatgtgg agaagctggg gagaaggcgt gggagggaaga 120
tggactcggg ggagaagggg gccgccacct ccgtctccaa cccgcggggg cgaccgtccc 180
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gtttgtgtgc tttcaaagat gttgggattt tatttatctg gggacagtgt gtatggtaag 1740
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&lt;210&gt; 535

&lt;211&gt; 2497

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2467)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2487)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2493)

<223> n equals a,t,g, or c

<400> 535

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gtacgggtgg tgcctgggcga cgtgggccgc agcccccgta tgcagtacca cgcgctgtcg 180
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gacaagcccc catctttctt taaagagaca cctctggacc tgcagcaccg gctcttcatg 720
aagctgggca gcatgcactc tccgttcagg gcccgctcag aacctgagga ccaggtcacg 780
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<210> 536

<211> 4090

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (42)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (528)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (535)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2475)

<223> n equals a,t,g, or c

<400> 536

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<210> 537

<211> 586

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (56)

<223> n equals a,t,g, or c

<400> 537

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gcaaactccg cgcccgcgaa gcccggtctg gcccgccctt gctctgttct gcccgagga 180
gccgcccatt gatcgtgtcc tgtgctgaag atgtttccgg aacaacagaa agaggaat 240
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gactatgaga tatgtattca tactaatagc atgtgtttta caatgaaaac atcctgtgta 360
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gtacaactgc cagaacttcc atctaaaaac ctgtttttca acatgaacaa tcgccagcac 480
gtggatcagc gtcgccaggg tctgggaaat ttcctcagaa aagtcctaca gatgcacttt 540
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<210> 538

<211> 1250

<212> DNA

<213> Homo sapiens

<400> 538

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ttggagtcgc ccggacctga gaggtgctg cactgggcct cagccagccc tccggatgct 180
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<210> 539

<211> 1350

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1305)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1344)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1349)

<223> n equals a,t,g, or c

<400> 539

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cccagctgcg cgcgcccccc agtcccgcac ccgttcggcc caggctaagt tagccctcac 180
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<210> 540

<211> 2509

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (38)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (367)

<223> n equals a,t,g, or c

<400> 540

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ggccgcacgg cctcggcagc gatggcactg aaggactacg cgctagagaa ggaaaagggt 180
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<210> 541

<211> 1743

<212> DNA

<213> Homo sapiens

<400> 541

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<210> 542

<211> 2210

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (40)

<223> n equals a,t,g, or c

<400> 542

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<210> 543

<211> 1715

<212> DNA

<213> Homo sapiens

&lt;400&gt; 543

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gattggtggt gctggacctt cagagttatg atggtgatgc gcaaggcaaa gaagagatcg 360
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gggtgaaacg attaccaccc atagtgcgag gaggagccat cgacagatac tggcccaccg 480
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atgttaattt ggcagagagt gatttggcat ataccgggc catcatgggc agtggcaaa 660
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aagagamaaa aaaaaaaaaa aagaaagtc gacgc 1715

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&lt;210&gt; 544

&lt;211&gt; 3109

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1011)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 544

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agggaggcaa atacatgcag gcggtgattc agtatgggaa gatagtgtcc tgggttagaga 360
tggaatatgg tttatcagaa aaggaatcga aagcttctga atcatttctc cttgctgect 420
ttctgaacct ggccatgtgc tacctgaagc ttagagaata caccaaagct gttgaatgct 480
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&lt;210&gt; 545

&lt;211&gt; 1176

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 545

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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaa 1176

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&lt;210&gt; 546

&lt;211&gt; 1735

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (10)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 546

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<210> 547

<211> 1048

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1043)

<223> n equals a,t,g, or c

<400> 547

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<210> 548

<211> 736

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (719)

<223> n equals a,t,g, or c

<220>



<221> misc feature  
 <222> (724)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (727)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (734)  
 <223> n equals a,t,g, or c

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 cccggccgcc cgcgtccgct gggaatctag cttctccagg actgtggtcg ccccgccgc 180  
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 ggacgaaaac ttgtatgaga agaaccaga ctcccatggt tatgacaagg accccgtttt 300  
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<210> 549  
 <211> 2231  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (2224)  
 <223> n equals a,t,g, or c

<400> 549  
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 aacaaccttt ttagtagatg ggggaaaata ggaacttttt gccattaaaa cttaagttct 300  
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 atgtatatag gtctgaaata atatttcac ttttgatttt taattttaat aatattagac 480  
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 gtcctctaca gtcatttttg tttaaaaagt gactatttat ttatggtagc atatcaataa 600  
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&lt;211&gt; 1816

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 550

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&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 551

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<211> 4021

<212> DNA

<213> Homo sapiens

<220>

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<223> n equals a,t,g, or c

<400> 552

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&lt;211&gt; 1780

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 553

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<220>

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<210> 555

<211> 1997

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (1887)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1951)

<223> n equals a,t,g, or c

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<221> misc feature

<222> (1980)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1992)

<223> n equals a,t,g, or c

<400> 555

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<211> 906

<212> DNA

<213> Homo sapiens

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<222> (12)

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<221> misc feature

<222> (879)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (906)

<223> n equals a,t,g, or c

<400> 556

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475

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&lt;210&gt; 557

&lt;211&gt; 3484

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 557

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<210> 558

<211> 790

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (9)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (788)

<223> n equals a,t,g, or c

<400> 558

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477

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<211> 534  
<212> DNA  
<213> Homo sapiens

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<222> (16)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (17)  
<223> n equals a,t,g, or c

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<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (3039)  
<223> n equals a,t,g, or c

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479

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&lt;210&gt; 562

&lt;211&gt; 1386

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (480)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 562

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&lt;210&gt; 563

&lt;211&gt; 2638

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 563

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&lt;210&gt; 564

&lt;211&gt; 691

481

<212> DNA  
<213> Homo sapiens  
  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (575)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (581)  
<223> n equals a,t,g, or c

<220>  
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<222> (619)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (650)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (653)  
<223> n equals a,t,g, or c

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tcgagtggat tggaacactt caagccccca a 691

<210> 565  
<211> 1967  
<212> DNA  
<213> Homo sapiens



&lt;400&gt; 565

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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaggg gggggag 1967
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&lt;210&gt; 566

&lt;211&gt; 1334

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1253)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1307)

&lt;223&gt; n equals a,t,g, or c

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 <222> (1309)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (1312)  
 <223> n equals a,t,g, or c

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<210> 567  
 <211> 1610  
 <212> DNA  
 <213> Homo sapiens

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<210> 568

<211> 1412

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1018)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1037)

<223> n equals a,t,g, or c

<400> 568

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<210> 569

<211> 1125

<212> DNA

<213> Homo sapiens

<400> 569

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<210> 570

<211> 1916

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1899)

<223> n equals a,t,g, or c

<400> 570

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```

```

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```

<210> 571

<211> 1253

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1205)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1207)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1212)

<223> n equals a,t,g, or c

<400> 571

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gcccgcagtc cagcgtcttc aaccgtttct cgggcagctc tggaggccgc ggctttggct 180

```

```

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&lt;210&gt; 572

&lt;211&gt; 2013

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 572

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```

<210> 573

<211> 669

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (445)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (631)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (638)

<223> n equals a,t,g, or c

<400> 573

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taaacggga 669

```

<210> 574

<211> 2432

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2326)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2367)

<223> n equals a,t,g, or c

<400> 574

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<210> 575
<211> 1372
<212> DNA
<213> Homo sapiens
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<220>
<221> misc feature
<222> (71)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (1335)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (1338)
<223> n equals a,t,g, or c
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<220>
<221> misc feature
<222> (1370)
<223> n equals a,t,g, or c
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<210> 576

<211> 2020

<212> DNA

<213> Homo sapiens

<400> 576

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<211> 3161

<212> DNA

<213> Homo sapiens

<400> 577

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<210> 578

<211> 2046

<212> DNA

<213> Homo sapiens

<400> 578

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<210> 579

<211> 302

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (8)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (226)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (241)

<223> n equals a,t,g, or c

<400> 579

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agaaggggaag acgcccagaga cgctgcttcc ccagaagtgc tggggncagg gaggccagg 240
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tg                                                    302
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<210> 580

<211> 3067

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (626)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1808)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2945)

<223> n equals a,t,g, or c

<400> 580

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&lt;210&gt; 581

&lt;211&gt; 1574

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

<222> (457)

<223> n equals a,t,g, or c

<400> 581

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<210> 582

<211> 960

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (924)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (937)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (939)

<223> n equals a,t,g, or c

&lt;400&gt; 582

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&lt;210&gt; 583

&lt;211&gt; 541

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 583

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t 541
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&lt;210&gt; 584

&lt;211&gt; 2968

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (454)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1437)

&lt;223&gt; n equals a,t,g, or c



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<221> misc feature  
<222> (2961)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2964)  
<223> n equals a,t,g, or c

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&lt;210&gt; 585

&lt;211&gt; 2608

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (84)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 585

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500

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&lt;210&gt; 586

&lt;211&gt; 1893

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1184)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1865)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1883)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1887)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1893)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 586

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501

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&lt;210&gt; 587

&lt;211&gt; 2463

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2413)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 587

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<210> 588

<211> 1945

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1240)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1939)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1945)

<223> n equals a,t,g, or c

&lt;400&gt; 588

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tgaggtgggg ggaaggggang aagg 1945

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&lt;210&gt; 589

&lt;211&gt; 816

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 589

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catctctgac catgaggcca ccctgagggtg ctgggcccctg ggcttctacc ctgcggagat 720
cacgctgacc tggcagcggg atggggagga acagaccag gacacagagc ttgtggagac 780
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&lt;210&gt; 590

&lt;211&gt; 2307

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 590

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<210> 591  
<211> 1438  
<212> DNA  
<213> Homo sapiens

<400> 591  
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gcttgtggcc ccagccacag ccgccactgc ctaccggccg gactggaacc gtctgagcgg 180  
cctaaccgcg gcccggttag agacctgcgg gggatgacag ctgaaccgcc taaaggaggt 240  
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ggctgggagt ctagcctgca cctgacttgc tttatgacct cactgggctt cagtgtctcg 420  
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cccctcctcc gcctcagcgc atccactca gtgaaatgac ccgcgaagag atcaatgcgc 1080  
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<210> 592  
<211> 1078  
<212> DNA  
<213> Homo sapiens

<400> 592  
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acgtcaagtt cttccagctg gccgcgcagt ggtcctcgca cgtgaagcac tccccatct 480  
gcatcttcgg aactccaag gccaccttct agccccacc accagggggc ccacctcctg 540  
ccccatgctg tgaggggccc agctgcattt ctgttaacat ttcagtttac tacagagaca 600  
gacgcttaaa acacaaagag aaacagtctt aagtatgaat gtgctcaca cgtggaaact 660  
aacgggggag ctctgccag gagccgaata actgctctgc ttattaaccc gaacgttcgg 720  
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```
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gccgagggcc atggggccgc tcagtcccgt tggggttgtc ctgagttgag cctggggggg 960
ccgtcttgcc cgctaagag atgccccag caccgcacac tcgtggttcc caataaactc 1020
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<210> 593

<211> 2492

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2113)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (2452)

<223> n equals a,t,g, or c

<400> 593

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ggcctgagga cttcgacgac gccgcctacg agaagttttt ctccagctac ctggtcacgc 180
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gacagtgaag cgctatgtcc ggaaaggggt cccgctggag caccgtgccc gcgtctggat 300
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ccccgacaac gtgaagtctc ggaagaccac ggaccctgc ttacagagga ccctgtacaa 480
tgtgtctgtg gcatatgggc accataacca gggagtgggc tactgccagg gaatgaattt 540
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aaatgtgagt gtgggtttgt atctaataaa gtatgccaac acctgtgttt gngatcagtt 2460
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<210> 594

<211> 1904

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1878)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1893)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1895)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1903)

<223> n equals a,t,g, or c

<400> 594

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aaaaaaaaaa aaaaaaanag gggggggccc ccnanggggc ccna 1904
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<210> 595

<211> 337

<212> DNA

<213> Homo sapiens

<400> 595

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aggaggcttc caggacggac ttcagatcac tgtcaatggg accgttctca gctccagtgg 240
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<210> 596

<211> 1288

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1283)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1285)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1287)

<223> n equals a,t,g, or c

<400> 596

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<210> 597

<211> 1052

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (937)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (943)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (995)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1004)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1009)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1040)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1051)

<223> n equals a,t,g, or c

<400> 597

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accccaaata aggaagattg tggatcaaata aagacctgat aggcaaaactc taatgtggag 180
tgcgacttgg ccaaaaagaag taagacagct tgctgaagat ttcctgaaaag actatattca 240
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<210> 598

<211> 2093

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (969)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1422)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (1425)

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<222> (1481)

<223> n equals a,t,g, or c

<400> 598

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gcacccatgc acacacctac gcacacacaa cactccgcac tgcagtatat tcttgccaaa 180
gatttccttt aaaagcaagc acttttacta attattattt tgtaaagtgt tatcttcttc 240
tgtcttctcc ctccctgaat ctattttact gttgtttatt gttgaatctg tgtgtcagcc 300
aggagagcgc tgtctggcct tgaacatggg ctgggatggg aaagggctct ggagaagatg 360
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cccgtgctgc caccagctgt ccagctgggt gtctggaggg aagagggcag aggagggtca 480
tgtcccttca gctgggggag gggcccagtg agctccacgt ggctttttcc caaagggagc 540
aagagggaag gattgggcga gaaaacaatg gagaggggac ctgcgaagga aaacagggag 600
gaagtgagcg gtttgatcag cctgctatca cgggtgtctg gctctcttat ttagccaggc 660
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gagcgtctcc tccagtagct ctgaaagctg tggacaccaa tggccaggat tccttctccc 780
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tagatggaat tatactttat attttgtatc atcgtgccta tagccgctgc caccgtgtat 1920
aaatcctggt gtmgtctcct tatcctggac atgaatgtat tgtacactga cgcgtcccca 1980
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taaaagaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa 2093
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<210> 599

<211> 562

<212> DNA

512

<213> Homo sapiens

<220>

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<222> (349)

<223> n equals a,t,g, or c

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<222> (383)

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<222> (437)

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<222> (473)

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<222> (561)

<223> n equals a,t,g, or c

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<222> (562)

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<400> 599

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cgaggtctca ctatgcccag gttggtctca aactcctgtg ctcaagcaat cctcccatct 180

tggtcccta agtgctggga ttataggcat gagccaccgt gcccggcctc atgtctgcat 240  
gttaaaagtt ctgagaattc ctatggaaaa taaatttgac ttgtcttaat gcagttcctc 300  
taaacttact taattccttt ttcttttttt ctttactatt tattaattnt tctcttttct 360  
cagaccttgc agggatgaaa ggnccccttt tctcaaaacc ctcttatgat ctctacactc 420  
tgcaagggtc tctgaangac agcangctga gaaaggccga tcctaacact tancctcttg 480  
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<210> 600

<211> 528

<212> DNA

<213> Homo sapiens

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<222> (104)

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<221> misc feature

<222> (417)

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<222> (444)



<223> n equals a,t,g, or c

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<222> (458)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (493)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (507)

<223> n equals a,t,g, or c

<400> 600

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ctggagtgca gtggtgtgat ctgggtcac tgcaacctct gcctcccagg ttccagcaat 180
tctcctgcct cagcctccct agtggtggg atgacaggcg cctgccatca tgcctgacta 240
gtttttgtat ttttagtaga gacggcggtt caccatgttg gccaggctgg tctcaaaactc 300
ctgacctcag gtgatccgcc tacctcagcc tcccaaagtg ctgggattac aggcgtgac 360
caccacacct ggcccttgca atcttctact ttaagggttg cagagataaa ccaatanatc 420
cacaccgtac atctgcaata tganttcaag aaaggaanta gtaccttcaa tacttaaaaa 480
tagtcttcca canaaaatac tttattnctg atctatacaa attttcag 528
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<210> 601

<211> 475

<212> DNA

<213> Homo sapiens

<220>

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<222> (145)

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<220>

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<222> (160)

<223> n equals a,t,g, or c

<220>

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<222> (172)

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<222> (174)

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<222> (185)

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<222> (191)

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<222> (297)

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<222> (302)

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<220>

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<222> (306)

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<220>

<221> misc feature

<222> (341)

<223> n equals a,t,g, or c

<220>  
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<220>  
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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

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<220>  
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ctgccattaa ggggtgtgggc cgaanatatg ctcattgtggn gttgaggaaa gnanacattg 180  
acctnaccacaa nagggcggnna gaactcactg angatgangt ggaacgtgtg atcaccatta 240  
tgcagaatcn acgccagtac aagatcccag actggttcctt gaacagacag aatgatngta 300  
angatnaatc tacttcaagc taacatgcta tcatttctac nttgagtact gctaagggtt 360  
ctttccacaa cttgtacaca atgttattna ctgccagtt tataatttcc ctnttggttc 420  
ccattttaag acttatttaa ttantatgcn ttttaaattt ttgagaentg ataga 475

<210> 602  
<211> 288  
<212> DNA  
<213> Homo sapiens

<220>  
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<220>  
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<222> (100)  
<223> n equals a,t,g, or c

<400> 602  
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cctgtccctg gactctggaa tgtntggctg aagttgaggn tctcttactc tctaggccac 120  
ggaattaacc cgagcaggca tggaggcctc tgctctcacc tcatcagcag tgaccagtgt 180  
ggccaaagtg gtcagggtgg cctctggctc tgccgtagtt ttgccctgg ccaggattgc 240  
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<210> 603  
<211> 432  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (365)  
<223> n equals a,t,g, or c

<220>  
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<222> (408)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (416)  
<223> n equals a,t,g, or c

<220>  
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<222> (421)  
<223> n equals a,t,g, or c

<220>  
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<222> (425)  
<223> n equals a,t,g, or c

<400> 603  
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gacttggtgtt gggactgctg ataggaagat gtcttcagga aatgctaaaa ttgggcaccc 120  
tgcccccaac ttcaaagcca cagctgttat gccagatggt cagtttaaag atatcagcct 180  
gtctgactac aaaaggaaaa tatgttgtgt tcttctttta ccctcttgac ttcacctttg 240  
tgtgccccac ggagatcatt gctttcagt atagggcaga agaatttaag aaactcaact 300  
gccaaagtgat tgggtcttct gtggattctc acttctgtca tctagcatgg gtcaatacac 360  
ctaanaaaca aggaggactg ggacccatga acattccttt ggtatcanac ccaacncaca 420  
nttgntcagg at 432

<210> 604  
<211> 371  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (282)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (291)  
<223> n equals a,t,g, or c

<400> 604  
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agagaagagt tgggttaaaaa ccttggtacc atagccaaat ctgggacaag cgagttttta 120  
aacaaaatga ctgaagcaca ggaagatggc cagtcaactt ctgatttgat tggccagttt 180  
ggtgtcgggtt tctattccgc ctcccttgta gcagataagg ttattgtcac ttcaaaacac 240  
aacaacgata cccagcacat ctgggagtct gactccaatg anttttctgt naattgctga 300  
cccaagaggg aaacactcta ggacggggga acgacaattt acgtggagta tggaccaatt 360  
tccttattaa g 371

<210> 605  
<211> 392  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (292)  
<223> n equals a,t,g, or c

<220>  
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<220>  
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<220>  
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<223> n equals a,t,g, or c

<220>  
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<222> (342)  
<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (363)

<223> n equals a,t,g, or c

<400> 605

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ctttcaggat taagcgattc ctggccaaga aacaaaagca aaatcgctcc attccccagt 120
ggattcggat gaaaactggg aaataaaatc aggtacaact ccaaaaggag acattggaga 180
agaaccaagc tgggtctatg aaggaattgc acatgagatg gcacacatat ttatgctgtc 240
tggaagggtgc acgatccatg ttaccatatg caagctggaa aatgtgcacc antatctggg 300
agattttcga cgtgtttttc cncctctggan nctgtttatg gnacaagggt ggtttggttt 360
gntccatta aattaaatta ggtaaaggcc cc 392
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<210> 606

<211> 442

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (255)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (312)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (368)

<223> n equals a,t,g, or c

<400> 606

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agcgggcccg gcctgcggag gtgggcggca tgcagctccg ctttgcccgg ctctccgagc 120
acgccacggc cccaccccg ggctccgcgc gcgcgcggg ctacgacctg tacagtgcct 180
atgattacac aataccacct atggagaaag ctgttgtgaa aacggacatt cagatagcgc 240
tcccttctgg gtgtnatgga agagtggctc cacggtcagg cttggctgca aaacacttta 300
ttgatgtagg antggtgtca tagatgaaga ttataagagg aatgttggtg ttgtactgtt 360
taattttngg caagaaagtt tgaagtcaaa aaaggtgatc gaattgcaca gtcatttgca 420
acggattttt tatccagaaa ta 442
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<210> 607

<211> 182

<212> DNA

<213> Homo sapiens

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<221> misc feature

<222> (53)

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<220>

<221> misc feature

<222> (124)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (132)

<223> n equals a,t,g, or c

<400> 607

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agaaagtggg tgatccattt ttaagaaag attggtatga tgtgaaagca cctgctatgt 120  
tcantataag anatattgga aagacgctcg tcaccaggac ccaaggaacc aaaattgcat 180  
ct 182

<210> 608

<211> 673

<212> DNA

<213> Homo sapiens

<220>

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<222> (1)

<223> n equals a,t,g, or c

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<222> (2)

<223> n equals a,t,g, or c

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<222> (561)

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<222> (627)

<223> n equals a,t,g, or c

<220>

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<222> (630)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (652)

<223> n equals a,t,g, or c

<400> 608

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atcaccacag gactattcct agccatgcac tactcaccag acgcctcaac cgccttttca 180
tcaatcgccc acatcactcg agacgtaaataat tatggctgaa tcatccgctg ccttcacgcc 240
aatggcgccct caatattctt tatctgcctc ttcctacaca tcgggcgagg ccttatattac 300
ggatcatttc tctactcaga aacctgaaac atcggcatta tcctcctgct tgcaactata 360
gcaacagcct tcataggcta tgctctcccg tgaggccaaa tatcattctg aggggccaca 420
gtaattacaa acttactatc cgccatccca tacattggga cagacctagt tcaatgaatc 480
tgaggaggct actcagtaga cagtccacc ctcacacgat tctttacctt tcaattcatc 540
ttgcccttca ttattggcag ncctacagna ctcacctcta ttttttgccg aaacggggat 600
canncaacc ccttagggaa tcacctnccn tttccgataa aaatcaacct tncacccttt 660
actacacaat cat 673
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<210> 609

<211> 553

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (377)

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<220>

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<222> (449)

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<222> (497)

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<220>

<221> misc feature

<222> (536)

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<221> misc feature

<222> (545)

<223> n equals a,t,g, or c

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aaacttttgg acgacaatgg gaacattgct gaagaactga gcattctcaa atggaacaca 120
gacagtgtag aagaattcct gagtgaaaag ttggaacgca tataaatctt gcttaaattt 180
tgtcctatcc ttttgttacc ttatcaaag aaatattaca gcacctagaa aataatttag 240
ttttgcttgc ttccattgat cagtctttta cttgaggcat taaatatcta attaaatcgt 300
gaaatggcag tatagtccat gatatctaag gagttggcaa gcttaacaaa acccattttt 360
tataaatgtc catcctnctg catttggtga taccactaac aaaatgcttt gtaacagact 420
tgcggttaat tatgcaaag atagtttgng ataattgggg ccaagtttta cgaacaacag 480
atttctaaat tagaganggt taccaggaca gatgatacta tgcctaaggg ctgggngccc 540
ttttnaagga aga 553
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<210> 610

<211> 458

<212> DNA

<213> Homo sapiens

<220>

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<221> misc feature

<222> (18)

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<222> (215)

<223> n equals a,t,g, or c

<220>

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<222> (225)

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<220>

<221> misc feature

<222> (281)

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<220>  
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<220>  
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<220>  
<221> misc feature  
<222> (442)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

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tgactacttt ggcgaatggg acattagttg cattccgagg tcattatttc tggatgctaa 120  
gtccattcag tccaccatct ccagctcgca gaattactga agttttgggg aatcctttcc 180  
cccattgata ctgttttact aaggggaatt tttnagaaa aggtngcagc attcagcagt 240

524

atatttataa acaggaacct gtacagaagt gcccttggaa naaggcctgc tctaaaatta 300  
tccagtggta tngngnaacg acacagggtta agagacgtcg cttnaacgtg ctaaaaggac 360  
ctttccaana cacaccatca gaatccataa tcacctgccaa aatgggggtat cnagaccaag 420  
gggcctccan aaggagttaa gngggttaccg tggggnggg 458

<210> 611  
<211> 565  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (5)  
<223> n equals a,t,g, or c

<220>  
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<220>  
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<220>  
<221> misc feature  
<222> (471)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (534)  
<223> n equals a,t,g, or c

<400> 611  
aagcnganac caaccctcac taaagggaac aaaagctgga gctccaccgc ggtgcggccg 60  
ctctagaact agtggatccc ccgggctgca ggaattcggc acgaggttgc agtgagccga 120  
gatcgacca ttgcactcca gtctgggcaa cagagtgaga ttccgtctca aaaaaaaaaa 180  
gaaaaggaaa aaaaaatagc attatacctc ttccttgtct caaccgccat gaaaattctg 240  
aacactccaa attcagttga ataattccaa acaaaattta taagtataaa ataattttac 300  
ttctttatagt aatagtatac tttaaaaaagc ctcagggtat attatcttct aaacagctac 360  
aattcagtg cagctacatta accaactatg ttctctagtt gaggaacaac taggcctatt 420  
tcactgctgt gtacgctcag tgcctaacat gggtgccaaa taaatattnng nggattacac 480  
tgaattgtaa aaaccattcg tttttgttta caattgccaa aaatctcaaa aggnccctgta 540  
tttatgtaat tctttgaaat tatta 565

<210> 612  
<211> 442  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (253)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (294)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (297)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (319)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (328)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (333)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (365)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (413)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (415)  
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<220>  
<221> misc feature  
<222> (440)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (441)  
<223> n equals a,t,g, or c

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gtcggccacg tcgtccctcg gaggcctggg cggcggtcc gtgcgtattg ggccgggggt 120  
cgcttttcgc gcgccagca ttcacggggg ctccggcggc cgcggcgat ccgtgtcctc 180  
cgcccgcttt gtgtccctcg cctcctcggg gggtacggc ggcggtang gcggcgctcct 240  
gaccgcgtcc gangggctgc tggcgggcaa cgagaagcta accatgcaga actnaangac 300  
cgcttggtt ctactggana agttcgcncc tgnaggggca aagggaacta aaagttaaata 360  
ccgcnattgt acaaaacagg gcttggcctt cccggataaa gcattataaa gancntcagg 420  
aattggggaa aaatttttgn nc 442

<210> 613  
<211> 306  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (102)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (129)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (172)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<220>

527

<221> misc feature  
<222> (190)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (192)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (199)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (213)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (237)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (272)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (299)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (302)  
<223> n equals a,t,g, or c

<400> 613  
ggcanaggag aactccagga ttgtcctgca gatcgacaac gcccgtttgg ctgcagatga 60  
cttccgaacc aagtttgaga cggaacaggc tctgcgcatg ancgtggagg ccgacatcaa 120  
cggcctgcnc aggtgctgga tgagctgacc ctggcccaga accgaccttg gngatgcagt 180  
tcgancctn angaagagnt ggcctaccta agnaggaccc tgagggggaa tcaattncgt 240  
taaggggccca atgggaggcc attaatTTTg anttggttcc ttccggacct tttggccant 300  
cntggtt 306

<210> 614  
<211> 555  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (392)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (409)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (433)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (497)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (543)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (545)  
<223> n equals a,t,g, or c

<400> 614  
ggcgactaca gccactacta caccgaccatc caggacctgc gggacaagat tcttggtgcc 60  
accattgaga actccaggat tgtcctgcag atcgacaatg cccgtctggc tgcagatgac 120  
ttccgaacca agtttgagac ggaacaggct ctgcgcata ggcgtggaggc cgacatcaac 180  
ggcctgcgca ggggtgctgga tgagctgacc ctggccagga ccgacctgga gatgcagatc 240  
gaaggcctga aggaagagct ggcctacctg aagaagaacc atgaggagga aatcagtagc 300  
cttagggggc aagtgggagg ccaggtcagt gtggaggtgg attccgctcc gggcaccgat 360  
ctcgccaaga tcctgagtgga catgcgaagc cnatatgagg tcatggccna gcagaaccgg 420  
aaggatgctt aancctggtc accagcccgg actgaagaat tgaacccgga ggtagcttgc 480  
cacacggagc aacttcngat gagcagggtcc aaggttactg acctgcggcg caacccttaa 540  
ggncntgaga atgaa 555

<210> 615  
<211> 575  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (28)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (173)

<223> n equals a,t,g, or c

<400> 615

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tganagaaat taaccctcac taaagggnac aaaagctgga gctccaccgc ggtgcgnccg 60
ctctagaact agtggatccc ccgggctgca ggaattcggc acgaggctaa ggctgcgttg 120
gggtgaggcc ctacttcat ccggcgacta gcaccgcgtc cggcagcgcc agncctacac 180
tcgcccgcgc catggcctct gtctccgagc tcgcctgcat ctactcggcc ctacttctgc 240
acgacgatga ggtgacagtc acggaggata agatcaatgc cctcattaaa gcagccggtg 300
taaatgttga gcctttttgg cctggcttgt ttgcaaaggc cctggccaac gtcaacattg 360
ggagcctcat ctgcaatgta ggggccggtg gacctgctcc agcagctggt gctgcaacca 420
gcaggaggtc ctgccccctc cactgctgct gctccagctg aggagaagaa agtggaagca 480
aagaaagaag aatccgagga gtctgatgat gacatgggct ttggtctttt tgactaaacc 540
tcttttataa catgttcaat aaaaagctga acttt 575
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<210> 616

<211> 346

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (117)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (139)

<223> n equals a,t,g, or c

<400> 616

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ctcgtgccga attcggcacg agccgccgcc tccgccgcag acgccgccgc gatgcgctac 60
gtcgcctcct acctgctggc tgccctaggg ggcaactcct cccccagcgc caagggnatc 120
aagaagatct tggacaacnt gggtatcgag gcggacgacg accggctcaa caaggttatc 180
agtgaagctga atggaaaaaa cattgaagac gtcattgccc agggatttgg caagcttgcc 240
agtgtacctg ctggtggggc tgtagccgtc tctgctgccc caggctctgc agccccctgct 300
gctggttctg cccctgctgc agcagaggag aagaaagatg agaaga 346
```



530

<210> 617  
 <211> 409  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (356)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (380)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (388)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (397)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (408)  
 <223> n equals a,t,g, or c

<400> 617  
 gggcagggct gagccagcga cgccctccat tcactctccg cgcccgttct ccggctgtcc 60  
 tcccgttccg ctgcccgcc tgccaccatg acggaacagg ccatctcctt cgccaaagac 120  
 ttcttgccg gaggcacgc cgccgccatc tccaagacgg ccgtggctcc gatcgagcgg 180  
 gtcaagctgc tgctgcaggc ccagcacgcc agcaagcaga tcgccgccga caagcagtac 240  
 aagggcacgc tggactgcat tgtccgcac cccaaggagc agggcggtgt gtccttcttg 300  
 aggggcaacc ttgccaacgt cattcgtac ttccccactc aagccctcaa cttcgncttc 360  
 aaggataagt acaagcagan cttcctgnng ggcgtgnaca agcacacnc 409

<210> 618  
 <211> 473  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (5)  
 <223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (9)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (25)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (241)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (256)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (322)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (337)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (352)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (359)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (360)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (365)  
<223> n equals a,t,g, or c

<220>  
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<222> (368)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (416)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (436)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (442)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (446)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (470)

<223> n equals a,t,g, or c

<400> 618

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ggcanagcnc aaagacaggc ttttnagatt ggatctccgt ggcgtactat ggatgcttcc 60
gagagggggc gactattata caagttggca agttgatcaa agaagctgcc gggaaaagca 120
atctgaagag ggtgaccctg gagcttggag gaaagagccc ttgcattgtg ttagctgatg 180
ccgacttgga caatgctgtt gaatttgcac accatggggt attctaccac cagggccagt 240
nttgtatagc cgcattncagg atttttgtgg aagaatcaat ttatgatgag tttgttcgaa 300
ggagtgttga gcgggttaag antatatacct tgggaantcc tttgacccca gnagttcann 360
caagnccntc agattgacaa ggaccatttg gtaaatactt gacccatttg agagtnggaa 420
gaaagaaggg gccaaantgga tntggnggag gccctggggg ataaagggtan ttg      473
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<210> 619

<211> 604

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (371)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (440)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (492)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (500)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (537)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (554)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (584)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (587)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (593)

<223> n equals a,t,g, or c

<400> 619

cgacnttccc ctactaaagg gaacaaaagc tggagctcca ccgcggtggc ggccgctcta 60  
gaactagtgg atcccccggg ctgcaggaat tcggcacgag gtggtccccc tggcagggac 120  
aaatggcgag actaccaccc aagggttgga tgggctgtct gagcgctgtg cccagtacaa 180  
gaaggacgga gctgacttcg ccaagtggcg ttgtgtgctg aagattgggg aacacacccc 240  
ctcagccctc gccatcatgg aaaatgccaa tggtctggcc cgttatgcc a gtatctgcca 300  
gcagaatggc attgtgcccc tcgtggagcc tgagatcctc cctgatgggg accatgactt 360  
gaagcgcttg ncagtatgtg accgaaaagg tgcttggtt gctgctacaa ggctcttgag 420  
tgaccaccac atctacctgn aaggcacctt gctgaagccc aacatggtcc cccaggccat 480

```

gcttgcactc anaagttttn ttatgaagga gattgcccac ggcgaacccg tctcaancgc 540
tgtgcccgcga caantgcccc cccgcttgct acttgggatc aacnttncct gtnttggaag 600
gcca                                           604

```

```

<210> 620
<211> 312
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (2)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (41)
<223> n equals a,t,g, or c

```

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<220>
<221> misc feature
<222> (307)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (309)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (310)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (311)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc feature
<222> (312)
<223> n equals a,t,g, or c

```

```

<400> 620
gngccaacag ccttgccctgt caaggaaagt acactccgag nggtcaggct ggggctgctg 60
ccagcgagtc cctcttcgtc tctaaccacg cctattaagc ggagggtgttc ccaggctgcc 120
cccaacactc caggccctgc cccctccac tcttgaagag gaggccgcct cctcggggct 180
ccaggctggc ttgcccgcgc tctttcttcc ctctgacag tgggtgtgtg tgctgtctgt 240
gaatgctaag tccatcacc tttccggcac actgccaaat aaacagctat ttaaggggga 300
aaaaaanann nn                                           312

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535

<210> 621  
<211> 248  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (141)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (193)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (195)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (198)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (207)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (246)  
<223> n equals a,t,g, or c

<400> 621  
gatgattgtg aattcaaggc tgaaggaaat agcaaattca cctacacagt tctggaggat 60  
ggttgcacga aacacactgg ggaatggagc aaaacagtct ttgaatatcg aacacgcaag 120  
gctgtgagac tacctattgt ngatattgca ccctatgaca ttggtggtcc tgatcaagaa 180  
tttggtgtgg acntnggncc tgtttgnttt ttataaacca aactctatct gaaatcccaa 240  
caaaanaa 248

<210> 622  
<211> 344  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (4)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (19)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (31)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (273)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (279)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (283)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (297)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (301)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (303)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (310)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (312)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (342)

<223> n equals a,t,g, or c

<400> 622

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aatncggcac gaggcaccnc ctgcgcaccc ncaatcagtc cagcgatgag ctgcagctga 60
gtatgggaaa tgccatgttt gtcaaagagc aactcagtct gctggacagg ttcacggagg 120
atgccaagag gctgtatggc tccgaggcct ttgccactga ctttcaggac tcagctgcag 180
ctaagaagct catcaacgac tacgtgaaga atggaactcg agggactata acctgaacga 240
catacttctc cagctgaagt acacaggcaa tgnccagcna ctnttcatcc tgcctgntca 300
ngncaagatn gnggaagtgg aagccatgtt ggttttcaga gncc 344
```

<210> 623

<211> 316

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (248)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (286)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (294)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (308)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (313)

<223> n equals a,t,g, or c

<400> 623

```
gctcaaaggg agaccgggt ttccaggagg caaaggcgag gctggatttt tcggaatacc 60
cggtctgaag ggtctggctg gtgagccagg ttttaaaggc agccgagggg accctgggcc 120
cccaggacca ctcctgtca tcctgccagg aatgaaagac attaaaggag agaaaggaga 180
tgaagggcct atggggctga aaggatacct gggcgcaaaa ggtatccaag gaatgccagg 240
catcccangg ctgtcaggaa tccctgggct gcctgggagg cccggncaca tcanaggaat 300
caaggganac atngga 316
```



<210> 624  
<211> 445  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (112)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (172)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (187)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (222)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (241)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (253)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (266)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (311)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (327)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (331)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (381)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (383)  
<223> n equals a,t,g, or c

<220>  
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<220>  
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catggtgaag gttggcggtt acatccttgg ggagtttggg aaacctgaat tntggggacc 180  
cccgnntcca gccccccagt ggcagttctc cctgctccac tncaagttcc atctgtgaca 240  
ngtggccagg ggnccgtgct gctgtgccac ctgacatcaa gttcatcaac ctctttcccc 300  
gagaccaagg ncaccatcca gggggtncgt nggggtcggg tttccagttg cgcaatgttg 360  
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agttcnggnc aggtgttnga ggagt 445

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tctgctcccg tgactgaact ctgatcttga tagagagtcc cggccatggc agccaaagga 180  
ggcaccgtca aagctgcttc agcattcaat gccactgaag atgccagac cctgaggaag 240  
gcatgaagg ggcttggcac cgacgaagat gccatcatca gcgtcctcgc ctaccgcaac 300  
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atacctcana ctgctgctgg actcacttcg aaaagcccag ggnaattgac aacgtcctcg 180  
tcatcttttag ccatgacttc tggtcgaccg agatcaatca gctgatcgcc ggggtgaatn 240  
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<210> 627

542

<211> 412  
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gatgaattcc aaattctgct tgcttgcttt ttaatatga tatgcttata cacttacact 180  
ttatgcacaa aatgtagggt tataataatg ntaacatgga catgatcttc tttataattc 240  
tactttgagt gctgtctcca tgtttgatgt atctgagcag gntgctccac aggtagctct 300  
agcagggctg gcaacttann aggtgngag cagagaattc tcttatccaa catcaacatc 360  
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<210> 628  
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cactggccgt cgttttacia cgtcgtgact gggaaaaccc tggcgttacc caacttaatc 180  
gccttgcagc acatccccct ttcgccagct ggcgtaatag cgaagaggcc cgcaccgatc 240  
gcccttccca acagttgcgc agcctgaatg gcaaatggga cgcgccctgt agcggcgcat 300  
taagcgcggc ggggtgtggtg gttacgcgca gcgtgaccgc tacacttgcc agcggccctac 360  
gcccggtcct ttcgtttctt cccttccttt ctcgccacgt tcgccggnnt tccccgtnaa 420  
gctntaaatn gggggctncc tttanggttc cgattaangn tttacgggac cttngaccca 480  
aaaacttgat taggggtgatg gttacntaat gggccatngc ctgataaacg gttttgccct 540  
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 cgtcgtgact gggaaaaccc tggcgntacc caacttaatc gccttgacgc acatccccct 180  
 ttcgccagct ggcagtaata gcgaagaggg ccgcaccgat cgcccttccc aacagttgcg 240  
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 ggttacgcgc agcgtgaccg ctacacttgc cagcgcccta gcgnccgctc ctttcgcttt 360  
 cttcccttcc tttctcgcca cgttcgccgg ntttcccgt caagctctaa atcnggggct 420  
 ccctttangg ttccgatnta gtgctgtacg gcacctngac cccaaaaaac ttgattaggg 480  
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 nccacgttct taatagtga ctctttgggc caaacnggan caacantgaa cccctatctc 600  
 ggnctattct tttgatttat nagggatttt gncgatttca ggnctattgg ntaaaaaatg 660  
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 <211> 638  
 <212> DNA  
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550

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tatagggtca cctaaattca attcactggc cgncgtttta caacgtcgtg actgggaaaa 180  
ccctggcggt acccaactta atcgcccttc agnacatccc cntttcgcca gctggcgtaa 240  
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ggacncccc tgtancggng cattaancnc ggcgggtgtg gngggtaccc ncancngnac 360  
cgctacactt gccagngccc tagcgccttc tcctttcgtt ttcttccctt cctttntcgc 420  
cacgttcgcc ggctttcccc gtcaagctnt aaatcggggg ctcccttttag gggtccgatt 480  
aagngcttta cgggaccttn gnccccaaaa aaacttgatt aggggngatg gntcacngta 540  
aaggggccat tgccttgat aaaacggttn tttngccctt ttgaccttg aantccccgt 600  
ttctttaaaa aangggacct ttggttcna actgggaa 638

<210> 631  
<211> 187  
<212> DNA  
<213> Homo sapiens

<400> 631  
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gacgtcatag ctcttctata gtgtcaccta aattcaattc actggccgtc gttttacaac 120  
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tcgccag 187

<210> 632  
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<212> DNA  
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aagcttacgt acgcgtgcat gcgacgtcat agctcttcta tagtgtcacc taaattcaat 180  
tactggccg tcgttttaca acgtcgtgac tgggaaaacc ctggcgttac ccaacttaat 240  
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cgccc 305

<210> 633  
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<212> DNA  
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aaaaaaaaaa aaaaaaaaaa gggnggacga tctagaggat ccaaagctta cgtacnctn 180  
natgcaa 187

<210> 634  
<211> 243  
<212> DNA  
<213> Homo sapiens

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<223> n equals a,t,g, or c

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<222> (218)  
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atccaggcca naaagtccac agtcaaagtg ggaggggtat tcttnatgca ggagaccca 180  
ggccctggag gctgcnacat acctnaatcc tgtcccangc cggatcctnc tgaagccctt 240



ttt

243

&lt;210&gt; 635

&lt;211&gt; 180

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 635

cccacgcgtc cggaatgggt tagcgccagg ttccccacga acgtgcggtg cgtgacgggc 60  
gagggggcgg ccgctctaga ggatccaagc ttacgtacgc gtgcatgcga cgtcatagct 120  
cttctatagt gtcacctaaa ttcaattcac tggccgtcgt ttacaacgt cgtgactggg 180

&lt;210&gt; 636

&lt;211&gt; 747

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (4)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (6)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (497)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (507)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (639)

&lt;223&gt; n equals a,t,g, or c

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&lt;221&gt; misc feature

&lt;222&gt; (657)

&lt;223&gt; n equals a,t,g, or c

555

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&lt;221&gt; misc feature

&lt;222&gt; (747)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 636

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gggtcgaccc acgcgtccgc tagttctaga tcgcgagcgg ccgctctaga ggatccaagc 120
ttacgtacgc gtgcatgcga cgtcatagct cttctatagt gtcacctaaa ttcaattcac 180
tggcgcgtcgt ttacaacgt cgtgactggg aaaaccctgg cgttacccaa cttaatcgcc 240
ttgcagcaca tccccctttc gccagctggc gtaatagcga agaggcccgc accgatcgcc 300
cttcccaaca gttgcgcagc ctgaatggcg aatgggacgc gccctgtagc ggcgcattaa 360
gcgcggcggg tgtggtggtt acgcgcagcg tgaccgctac acttgccagc gccctagcgc 420
ccgctccttt cgctttcttc ccttcctttc tcgccacgtt cgcgggcttt ccccgtaag 480
ctctaaatcg ggggctncct ttagggnctc gatttaagtg ctttacggac ctcgacccca 540
aaaaacttga ttagggtgat gggtcacgta gtgggccatc gcctgataga cggttttcgc 600
ctttgacgtt ggagtcacgt cttaataggg actcttgtnc aaactggaac aacactnaac 660
ctatttggct atcttttgat tataaggatt tgccgattcg gcattggtaa aaatgagtgt 720
tacaaaatta cgcgattaca aaaatan 747
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&lt;210&gt; 637

&lt;211&gt; 497

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (375)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (415)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (445)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (446)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (463)

&lt;223&gt; n equals a,t,g, or c

556

<220>  
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tcgtgactgg gaaaaccctg gcgttaccca acttaatcgc cttgcagcac atcccccttt 180  
cgccagctgg cgtaatagcg aagaggcccg caccgatcgc ctttcccaac agttgcgcag 240  
cctgaatggc gaatgggacg cgccctgtag cggcgcatta agcgcggcgg gtgtggtggt 300  
tacgcgcagc gtgaccgcta cacttgccaa gcgccctaag cgcccgttcc tttcgctttc 360  
ttcctttctt ttttngccac gttcggccgg cttttcccg taaagcttta aatcnggggg 420  
gttcctttaa ggggttccga ttaannggtt ttacgggaac ttngacccca aaaaaacttg 480  
attagggggg aaggtn 497

<210> 638  
<211> 509  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (321)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (348)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (385)  
<223> n equals a,t,g, or c

<220>  
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<222> (394)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
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<220>  
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<220>  
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<220>  
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 <223> n equals a,t,g, or c

<220>  
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 <222> (463)  
 <223> n equals a,t,g, or c

<220>  
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 <223> n equals a,t,g, or c

<220>  
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 <222> (496)  
 <223> n equals a,t,g, or c

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 gcgacgtcat agctcttcta tagtgtcacc taaattcaat tcaactggccg tcgttttaca 120  
 acgtcgtgac tgggaaaacc ctggcggttac ccaacttaat cgccttgag cacatcccc 180  
 ttctgcagc tggcgtaata gcgaagaggc ccgcaccgat cgccttccc aacagttgcg 240  
 cagcctgaat ggcgaatggg acgcgccctg tagcggcgca ttaagcgcgg cgggtgtggt 300  
 ggttacgcgc agcgtgaccg ntacacttgc cagcgcccta gcgccgntc ctttcgcttt 360  
 cttccttctt tctcggcacg gtcgnccggc tttncgccnc aagctntaaa tcgggggggct 420  
 tccntttagg gggtccgaat taagggttt accgggaacc ntngaacccc caaaaaactt 480  
 tgaattaggg tngaanggt tcacggtaa 509

<210> 639  
 <211> 507  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (214)  
 <223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (263)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (298)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (334)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (355)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (356)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (360)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (363)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (373)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (375)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (384)  
<223> n equals a,t,g, or c

<220>

559

<221> misc feature  
<222> (407)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (430)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (453)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (481)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (485)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (489)  
<223> n equals a,t,g, or c

<400> 639  
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gcgacgtcat agctcttcta tagtgtcacc taaattcaat tcaactggccg tcgttttaca 120  
acgtcgtgac tgggaaaacc ctggcggttac ccaacttaat cgccttgacg cacatcccc 180  
tttcgccagc tggcataata gcgaagaggc ccgnaccgat cgcccttccc aacagttgag 240  
cagcctgaat ggcgaatggg acncgccctg tagcggcgca ttaagcgcg cggggtgtngt 300  
ggttacgcgc agcgtgaccg ctacacttgc agnccctag cgcccgctcc tttcnntttn 360  
ttnccttcct ttntngcacg tttnacggct ttcccgtaa gctctanac gggggctcct 420  
ttagggttcn atttaagtgt tacggacctt tanccaaaaa acttgatatg gttatggtta 480  
ntgtnttgng ccattgcctt atttccc 507

<210> 640  
<211> 496  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (33)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (37)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (126)  
<223> n equals a,t,g, or c

<220>  
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<222> (140)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (167)  
<223> n equals a,t,g, or c

<220>  
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<222> (240)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (317)  
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<220>  
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<222> (330)  
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<220>  
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<222> (337)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (346)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (354)  
<223> n equals a,t,g, or c

<220>  
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<222> (356)  
<223> n equals a,t,g, or c

<220>  
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<222> (372)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (379)  
<223> n equals a,t,g, or c

<220>  
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<222> (390)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (392)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (393)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (396)  
<223> n equals a,t,g, or c

<220>  
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<222> (426)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (427)



<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (430)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (433)

<223> n equals a,t,g, or c

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<222> (438)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (441)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (446)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (459)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (460)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (463)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (478)

<223> n equals a,t,g, or c

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cctcaaggtt aaacctcgg aatacgatag gaaaatgtaa aggccaagat ccaggataag 120  
gaaggnattc ctctgaatn cagcagagaa ctgaatcttt gcctggncaa gcagctggga 180

563

```

aggatgggac gttactttgt gctgaactta caatatttca aaaggggttc ttacttcttn 240
atcttgtgtt gagaatttcg tgggtggtgc ttaggaaagg ggaaggagga agtttttaca 300
accattccca ggaaggntta ggcccagggn aaagganggt ttaagntggt tgtncncgaa 360
atTTTTtagg gngggttgng attgggcaan tnngtnggct ttggttgggg ggttccctt 420
tttaanngan ttnggggntt ngggnggtt tttttggggn ggnaaatTTT tttAaggnct 480
tttttttggg ggaaaaa 496

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<210> 641
<211> 186
<212> DNA
<213> Homo sapiens

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<220>
<221> misc feature
<222> (112)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (133)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (148)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (167)
<223> n equals a,t,g, or c

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<220>
<221> misc feature
<222> (177)
<223> n equals a,t,g, or c

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<400> 641
ggcaaacatg cagatctttg tgaagaccct cactggcaaa accatcaccc ttgaggtcga 60
gccagtgac accattgaga atgtcaaagc caaaattcaa gacaaggagg gnatccacc 120
tgaccagcag cgntgatat ttgccgnaa acagctggaa ggatggncgc aactctntca 180
gactac 186

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<210> 642
<211> 519
<212> DNA
<213> Homo sapiens

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<220>
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<222> (168)

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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (188)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (209)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (216)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (217)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (218)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (278)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (282)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (284)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (299)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (316)

<223> n equals a,t,g, or c

<220>  
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<222> (320)  
<223> n equals a,t,g, or c

<220>  
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<222> (333)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (364)  
<223> n equals a,t,g, or c

<220>  
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<222> (374)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (396)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (405)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (428)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (437)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (494)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (500)  
<223> n equals a,t,g, or c

566

<400> 642  
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gctccgatgt atttgatggt gacctgggaa tggggcagcc aagggtgca aagcctcccc 120  
acacatgacc ccagccctct acagcggtaa ggtgaggac ccacattnc cctgcccctct 180  
gagacttngg gggacgttgc ccccctgana tgcagnnng gcctgaatat gtgaaccagc 240  
cagatgttcg gccccagccc ccttcgcccc gaagatgngc tngnctgctg cccgacctnc 300  
ttggtgccac tctggnaagn ggccaagaat ctnttcccca gggaagaatt gggtcgtcaa 360  
aagnggtttt tgcnttttgg gggttccgtt gagaancccg agtangttta caacccaag 420  
ggaagaanct tcccctnaag cccaacctt ctctcttgct taagccagcc ttgacaacc 480  
tctaataatt ggancagan ccaacaaaac cgggggggtc 519

<210> 643  
<211> 138  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (11)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (36)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (72)  
<223> n equals a,t,g, or c

<220>  
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<222> (74)  
<223> n equals a,t,g, or c

<220>  
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<222> (92)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (102)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (103)  
<223> n equals a,t,g, or c

567

&lt;400&gt; 643

```
agttccttgc ngcaggcaac ccacttaggt ggccancaat cttgacttcc agatggaaga 60
gtgacatcta tnanaggaaa agtgatggca tntatatcat anntctcaag aggacctggg 120
agaagcttct gctgggca                                     138
```

&lt;210&gt; 644

&lt;211&gt; 602

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (530)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (554)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (562)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (591)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (602)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 644

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gcccacgcgt cggcgagct gagtggttgt gtggtcgcgt ctcggaaacc ggtagcgctt 60
gcagcatggc tgaccaactg actgaagagc agattgcaga attcaaagaa gctttttcac 120
tatttgacaa agatggtgat ggaactataa caacaaagga attgggaact gtaatgagat 180
ctcttgggca gaatcccaca gaagcagagt tacaggacat gattaatgaa gtagatgctg 240
atggtaaatg cacaattgac ttccctgaat ttctgacaat gatggcaaga aaaatgaaag 300
acacagacag tgaagaagaa attagagaag cattccgtgt gtttgataag gatggcaatg 360
gctatattag tgctgcagaa cttcgccatg tgatgacaaa ccttggaaga gaagttaaca 420
gatgaagaag tttgatgaaa tgatcagggg agcagatatt gatggtgatg gtcaagtaaa 480
ctatgaagag tttgtaccaa atgatgacag caaaagtgaag agaccttttn ccagaatggg 540
gttaaatttc ttgnaccaaa antgggtaat ttggcctttt ctttggttgg naacttatct 600
gn                                     602
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&lt;210&gt; 645

&lt;211&gt; 112

&lt;212&gt; DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (24)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (41)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (48)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (59)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (106)

<223> n equals a,t,g, or c

<400> 645

atntgttggg ccggaactgg gctngtttca ccggaagaa ngtggganct gcctctgana 60  
atgtgtatgt ccacatacca caccttagga attctcacga aaagtnttcc aa 112

<210> 646

<211> 514

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (178)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (348)

<223> n equals a,t,g, or c

<220>  
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 <222> (389)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (391)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (444)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (463)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (466)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (473)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (485)  
 <223> n equals a,t,g, or c

<400> 646  
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 ccgtgacaac aacaggggtgg gcttcgccga ggctgccgc ctctagtcc caaggcgtcc 120  
 gcgcgccagc acagaaacag aggagagtc cagagcagga ggcccctggc ccagcggnc 180  
 ctcccacaca caccacaca ctgcgccgc cactgtcctg ggcgccctgg aagccggcg 240  
 gccaaagccga cttgctgttt tgttctgtgg ttccctcc ctgggttcaa aaatgtgcc 300  
 tgctgtctgt ctctccatct tgtttggtgg gttaaactga tccaaaanaa aatttgtcc 360  
 gtgattggaa aaaccaccca acttgaanc nactctttt cctgggtcct tctctccagg 420  
 atcccccccg gcctacaagc cgtnggttaa cctaccaaac agngcncccg gnccttgaa 480  
 ctgcnctaa gcccttccaa ttggccattg gttc 514

<210> 647  
 <211> 525  
 <212> DNA  
 <213> Homo sapiens



570

<220>  
 <221> misc feature  
 <222> (11)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (14)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (23)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (25)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (73)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (480)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (517)  
 <223> n equals a,t,g, or c

<400> 647  
 ccctactaat ntgngcaaaa gcnengagct ccaccgcggt ggcggccgct ctagaactag 60  
 tggatccccc ggnttgacagg aattcggcac gagcacgcag cggcccgtgg acatcgtctt 120  
 cctgctggac ggctccgagc ggctgggtga gcagaacttc cacaaggccc ggcgcttcgt 180  
 ggagcaggtg gcgcggcggc tgacgctggc ccggaggagc gacgaccctc tcaacgcacg 240  
 cgtggcgctg ctgcagtttg gtggccccgg cgagcagcag gtggccttcc cgctgagcca 300  
 caacctcacg gccatccacg aggcgctgga gaccacgcaa tacctgaact ccttctcgca 360  
 cgtggggcgca ggcgtggtgc acgccatcaa tgccatcgtg cgcagcccgc gtggcggggc 420  
 ccggaggcac gcagagctgc ctctgtggtc ctcacggacg gcgtcacggg caacgacagn 480  
 ctgacgagtc ggcgcactcc atgcgcaagc agaacgngga cccac 525

<210> 648  
 <211> 317  
 <212> DNA  
 <213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (79)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (118)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (126)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (146)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (159)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (171)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (173)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (176)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<220>

572

<221> misc feature  
<222> (194)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (207)  
<223> n equals a,t,g, or c

<220>  
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<222> (245)  
<223> n equals a,t,g, or c

<220>  
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<222> (258)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (297)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (301)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (316)  
<223> n equals a,t,g, or c

<400> 648  
gcncagatgg gcatgctgaa ggggcctctt cttaacaaat ttctgaccac agccaaagat 60  
aagaaccgct gggaggacnc tggttaagcag ctctacaacg tggaggccac atcctatncc 120  
ctcttngccc tactgcagct aaaagncttt gactttgtnc ctcccgtcgt ncnttngctc 180  
aatgnacaga gatnctacgg tgggtggnat ggctctaccc aggccacctt catggtgttc 240  
caagncttag ctcaatanca gaaggacggc cctgaccacc aggccactgaa ccttgangtg 300  
nacctccaaa tgctcng 317

<210> 649  
<211> 575  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (501)  
<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (509)

<223> n equals a,t,g, or c

<400> 649

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gtaggaacac cctcatcatc tacctggaca aggtctcaca ctctgaggat gactgtcttag 60
ctttcaaagt tcaccaatac tttaatgtag agcttatcca gcctggagca gtcaaggtct 120
acgcctatta caacctggag gaaagctgta cccggttcta ccatccggaa aaggaggatg 180
gaaagctgaa caagctctgc cgtgatgaac tgtgccgctg tgctgaggag aattgcttca 240
tacaaaagtc ggatgacaag gtcaccctgg aagaacggct ggacaaggcc tgtgagccag 300
gagtggacta tgtgtacaag acccgactgg caaggttcaa gctgtccaat gactttgacc 360
gagtacatca tggccattga gcagaccatc aagtcaggct cggatgaggt gcaggttgga 420
cagcagcgca cgttcatcag ccccatcaag tgcagagaag ccctgaagct tgaggagaag 480
aaacactact tcatgtgggg nctcttctnc caattctggg gagagaagcc caaccttagc 540
tacatcatcg ggaaggacac ttgggtggag cactg 575
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<210> 650

<211> 277

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (186)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (243)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (256)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (265)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (267)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (269)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (276)

<223> n equals a,t,g, or c

<400> 650

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tcgacccacg cgtccggcat tgtctatcat tgcactggag atccaagcac agaagtgtgt 60
agagttaaca gaaggaatag aatgtcttca gacacattcc aagataaatg gcagagattt 120
gaccttcttg caagaacttg tatccaagtg tttaactgaa tattcatcta agcaaagtgg 180
ttccanacca aatgttccag aagtttgaaa atggatttgt tcctggacgt actgcacggc 240
aanctgaagc acaggntact aacngntna acccanc 277
```

<210> 651

<211> 357

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (9)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (13)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (86)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (89)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (97)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (100)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (106)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (175)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (221)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (289)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (299)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (321)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (324)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (355)  
<223> n equals a,t,g, or c

<400> 651  
ggcacaggnt ccngggtgga gctggctgag tcgcgcgctc tgctccaccc gggggggctg 60  
ttttttctgg gcctggctcg cggcgnacng agatggnagn gcagtnggac gaggccgtga 120  
agtaatacac cctaggagga gattcagaag cacaaccaca gcaagagcac ctggnctgat 180  
cctgncacca caaggtgtac gaatttgacc aaatttctgg nagaggcatc cctggtgggg 240  
gaggaagttt taaggggaac aagcttgagg gtgacgctac ttgaggaant tttgagggnt 300  
gttcggggca cttttaccag ntgncccaag ggaaaattgt tcccaaaaac atttnca 357

576

<210> 652  
<211> 190  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (138)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (146)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (148)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (172)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (180)  
<223> n equals a,t,g, or c

<400> 652  
ggacgctact tcccctatca tagaagagct tatcaccttt catgatcacg ccctcataat 60  
cattttcctt atctgcttcc tagtcctgta tgcccttttc ctaacactca caacaaaact 120  
aactaatact aacatctnag acgctnanga aatagaaacc gtctgaacta tnctgcccgn 180  
catcatccta 190

<210> 653  
<211> 603  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (415)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (600)  
<223> n equals a,t,g, or c

577

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<400> 653
gcttcgaccc cgccggagga ggagacccca ttctatacca acacctattc tgatTTTTcg 60
gtcacccctga agtttatatt cttatccctac caggettcgg aataatctcc catattgtaa 120
cttactactc cggaaaaaaa gaaccatttg gatacatagg tatggtctga gctatgatat 180
caattggctt cctaggggtt atcgtgtgag cacaccatat atttacagta ggaatagacg 240
tagacacacg agcatatttc acctccgcta ccataatcat cgctatcccc accggcgta 300
aagtatttag ctgactcgcc acaactccacg gaagcaatat gaaatgatct gctgcagtgc 360
tctgagccct aggattcatc tttcttttca ccgtaggtgg cctgactggc attgnattag 420
caaactcatc actagacatc gtactacacg acacgtacta ccgttgtagc ccacttccac 480
tatgtcctat caataggagc tggatttgcc atcataggaa ggcttcattc actgatttcc 540
ctattctcag gctacaccct agaccaaacc tacgccaaaa atcatttcac tatcataatn 600
cac 603

```

&lt;210&gt; 654

&lt;211&gt; 356

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (198)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (270)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (302)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (328)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (340)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (347)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 654

```

ggTTTTTTTc ttcgcaggat ttttctgagc cttttaccac tccagcctag cccctacccc 60
ccaattagga gggcactggc cccaacagg catcaccccg ctaaattccc tagaagtccc 120

```



578

```
actcctaaac acatccgtat tactcgcac aggagtatca atcacctgag ctcaccatag 180
tctaatagaa aacaaccnaa accaaataat tcaagcactg cttattacaa ttttactggg 240
tctctatitt accctcctac aaagcctcan agtacttcga gtctcccttc accatttccg 300
anggcaccta cggctcaaca ttttttgnag cccaggcttn cacgganttt cacgctc 356
```

&lt;210&gt; 655

&lt;211&gt; 682

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (660)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 655

```
gcgcaagtag gtctacaaga cgctacttcc cctatcatag aagagcttat cacctttcat 60
gatcacgccc tcataatcat tttccttacc tgcttcctag tcctgtatgc ccttttccta 120
acactcacaa caaaactaac taataactaac atctcagacg ctcaggaaat agaaaccgct 180
tgaactatcc tgcccgccat catcctagtc ctcatcgccc tcccatccct acgcacccct 240
tacataacag acgaggtcaa cgatccctcc cttaccatca aatcaattgg ccaccaatgg 300
tactgaacct acgagtacac cgactacggc ggactaatct tcaactccta catacttccc 360
ccattattcc tagaaccagg cgacctgcca ctccctgacg ttgacaatcg agtagtactc 420
ccgattgaag ccccatctcg tataataatt acatcacaa acgtccttgc ctcattgagct 480
gtccccacat taggcttaaa aacagatgca attcccgac gtctaaacca aaccactttc 540
accgctacac gaccgggggt atactacggt caatgctctg aaatctgtgg agcaaaccac 600
agtttcatgc ccatcgccct agaattaatt cccctaaaaa tctttgaaat aaggggcccg 660
atttacccta tagcaccctc ct 682
```

&lt;210&gt; 656

&lt;211&gt; 520

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (429)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (442)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (449)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

579

<222> (483)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (485)  
<223> n equals a,t,g, or c

<400> 656  
gagaagagct taccaccttt catgatcacg ccctcataat cattttcctt atctgcttcc 60  
tagtcctgta tgcctttttc ctaacactca caacaaaact aactaatact aacatctcag 120  
acgctcagga aatagaaacc gtctgaacta tcctgccgcg catcatccta gtcctcagc 180  
ccctcccatc cctacgcac ctttacataa cagacgaggt caacgatccc tcccttacca 240  
tcaaataaat tggcaccaat ggtactgaac ctacgagtag accgactacg gcggactaat 300  
cttcaactcc tacatacttc cccattatt cctagaacca ggcgacctgc gactccttga 360  
cggtgacaat cgagtagtac tcccattga agcccatc gtataataat tacatcacia 420  
gacgcttga ctcaagagct gncacacant aggcttaaaa acaggatgca atttccgggc 480  
ggntnaaaca aaacaatttt accggtacac gaacggggggg 520

<210> 657  
<211> 353  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (227)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (340)  
<223> n equals a,t,g, or c

<400> 657  
gcactttctg ccaaagaaat ctctcctttt gcttctagca ccgactagat ttccttcagc 60  
tgatgattga ctcccagaat tcgaaagaaa ctgagtccca caaagctctg tctgatctgg 120  
agctcgcagc ccagtcaata atcttcattt ttgctggcta tgaaaccacc agcagtgttc 180  
tttcttcac tttatatgaa ctggccactc accctgatgt ccagcnaaaa ctgcaaaaagg 240  
gagattgatg cagttttgcc caataaggca ccacctacct atgatgccgt ggtacagatg 300  
gattaccttg acatggtggt gaatgaaacc tcaaattatn cccgttggtg tta 353

<210> 658  
<211> 362  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (5)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (203)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (215)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (240)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (262)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (310)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (321)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (333)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (338)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (362)  
<223> n equals a,t,g, or c

<400> 658  
ggcanaggcc accaccatcc tgcattgccc actttacttg gccttctcct ggctctaact 60  
caggcagcca agacccctcc cacttccttc ttggcctcc ctctcctcag gtatgaaaat 120  
gaagctggcc ctgcgccag gcgtttgaag gctgacatca acggcttgcg ccgagtcctg 180  
ggatgagctg accctggcca ggnctgacct ggagntgcag atcgagggcc tgaatgaggn 240

agctagcctt acctgaagtg gnaccacgaa ggagggagat ggaaggagtt tcagcagcca 300  
gttgcccggn caagttcaat nttggagatg ggncggancca ccgggtgtgg gacctgaccc 360  
gn 362

<210> 659

<211> 447

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (7)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (33)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (47)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (100)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (147)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (168)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (175)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (202)

<223> n equals a,t,g, or c

<220>

<221> misc feature

582

<222> (204)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (228)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (240)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (247)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (286)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (294)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (353)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (445)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (446)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (447)  
<223> n equals a,t,g, or c

<400> 659  
gcttctnecg tccttctagg atctccgect ggntcggccc gcctgcntcc actcctgcct 60  
ctaccatgtc catcaaggtg acccagaagt cctacaaggn gtccacctct agccccggg 120

ccttcagcag cgcctcctac acgaatnggc ccggttcccg catcaacncc tcgancttct 180  
cccgaatagg cagcagcaac tntngcagtg gcctgggcgg cggctatngt ggggccagen 240  
gcatggnagg catcaccgca gttacggtca accagagcct gctgancccc cttntcctgg 300  
agggtggacc caacatccag gccgtgcgca cccaggagaa ggagcagatc aanaccctca 360  
acaacaagtt tgcctcttca tagacaaggt aggttccttg agcagcagaa caagatgttg 420  
gaaaccaagt agagctcctt gagcnnn 447

<210> 660

<211> 295

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (55)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (70)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (73)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (82)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (86)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (95)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (121)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (131)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (144)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (168)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (173)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (229)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (241)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (257)  
<223> n equals a,t,g, or c

<220>  
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<222> (270)  
<223> n equals a,t,g, or c

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585

<220>  
 <221> misc feature  
 <222> (284)  
 <223> n equals a,t,g, or c

<400> 660  
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 agtagaacgn gancctccag gntgcnatgc aagtntgtcg caatgttctc ctgggaccct 120  
 nagctggtgc nagggggtgg ggcntccaaa atggctgtgg cccatgcntt ganagaaaaa 180  
 tccanggccca tggactggtg tgggaacaat ggccatacag ggctgttgnc cagggcccta 240  
 naggttcatt cctcgtnacc ctggatccan aaactgtggg gggnacagcca ccatt 295

<210> 661  
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<220>  
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 ctcatcacca acgatgaggc atacgtgag gagtttgga acgagacgtg gggcgtaaca 120  
 aaggcagcag agaaacaaat gaaggacaaa caggacgagg agcagaggct taaggaggag 180  
 gaagaagaca agaaacgcaa agaggangan ga 212

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 <211> 130  
 <212> DNA  
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<220>  
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<222> (48)

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<211> 232

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acaactaatt gtcggtgtna acaaaatgga ttccactgag ccaccctaca gccagaagag 180  
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caccacgtcc cgaattctca gacgacacct ggagactgtc ccgacactcc cctgagaggt 180  
ttctggggcc cgctgcggtc acgagggggg gcccggttac ccaattcgtc ctatagtgat 240  
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<222> (342)

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<400> 665

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cgggcaagtc caccactact ggccatctga tctataaatg cgggtggcatc gacaaaagaa 180
ccattgaaaa atttgagaag gaggtgctg agatgggaaa gggctccttc aagtatgcct 240
gggtcttgga taaactgaaa gctgagcgtg aacgtggtat cncattgga tatctccttg 300
tggaatttg agaccagcaa gtactatgtg actnnncatt gnatgcccc aggacacaga 360
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<210> 666

<211> 332

<212> DNA

<213> Homo sapiens

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590

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<220>  
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tccccggtcc ttcgagctcc ttgtgcgcgc tgttggtgct gctgctgctg ctgacgcagc 180  
cagggcccat cgccagcgct ggtcctgccg ntgctgtggt ganagagctg cgttgccggt 240  
tgtttacaga ccacgcaagg agtccatccc aaaaatgatc agtaatntgc aagtgtncgc 300  
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gganctgntc atgtccttgn atccanacaa attgtgccga cgacgccatg gaccctggta 180  
ctaaaganag agcttggtgc gcatttggaa ttgcacccatg cacgggcctg accttctggg 240  
naccagcgt gtgtaggcag aggacagggt gacaattttg tctttgcgca tggcntaatg 300  
ccatctgtgg tcatgacagg ttgttcatca agtnnggant caggcaatga aggcngtggg 360  
t 361

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<212> DNA  
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ttgcacacgc ctgaaaagtg ggtgaggttc aagtacccaa agctcatctc ctattcctac 180  
atggttcgtg ggggccactt tgcggccttt gaggagccgg agctgctcgc ccaggacatc 240  
cgcaagttcc tgtcgggtgct ggagcggcat gnanccaccc ctctcccccc gcttgccact 300  
tccccccaca atgccctcca ggnnttcttg ggggaagata accntttctg aggatgantt 360  
tgccctccgtc cntgnccag ttggganccc agttcaaccc ctnaaccttc nagttaattc 420  
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aaaaaaaaatc nggggggggc ccgtaacaat tgnccnaa 518

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594

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gcttccctcc aagaggaacc cggggttccc gagggaaccc ctctggagga ggaaacgtcc 180  
agcaccgagc tggagactgg cagtgtccca atccttcaat tgggtgattc tgctgtgatg 240  
taattgtatg caggggttgt ggaaaccaga acttcgcctg gagaacagag tgcaaccagt 300  
gtggtgatcg tggcagaggt ggccctggtg gcatgcnggg aggaagaggt ggcctcatgg 360  
atcgtggtgg tcccgttggg atgttcagag gtggccgtgg tggagacaga ggtggcttcc 420  
gtggtggccg gggcatggac cgaggtggct ttngtggagg aagacgaggt ggccctgggg 480  
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gaaaa 545

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595

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gctacagtca acatcttgat ntcactgtgc caactgcggt gcctgcccctt canagccctg 180  
cactttgttt tntcccttg gcttcacnac tacatcagtg gcacccctca tgetctgatt 240  
gtgcgtcgtc acctctccct gctggacacg gccgtggagc tgganctccc aagataccgg 300  
ggccccgcc ttccccgaan gcagtaagtg cccatctttc cccaacctct cntcaccgac 360  
cgtgcccgtc gcaagtacng tcacaa 386

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596

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gacccaacgg ccggca 436
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&lt;211&gt; 504

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601

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&lt;220&gt;

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&lt;222&gt; (482)

&lt;223&gt; n equals a,t,g, or c

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&lt;221&gt; misc feature

&lt;222&gt; (498)

&lt;223&gt; n equals a,t,g, or c

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&lt;221&gt; misc feature

&lt;222&gt; (503)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 672

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aattcggcac gagagcatat cnggtgcac tnnгаааgac atcgtgcact ctggntnggc 60
atacacantg gagcnntctg ccaggcaant tatgcgcaca gccatgaagn ataacctggg 120
tttngacctg agaacagctt cctatgntaa tgccattgng aangtcttca aagtgtacan 180
tgaagctggt gtgaccttca catngatgga ncatggctga cttncnact atcctcttca 240
catgtaactt ntgcagacct atcanaagtt tacatgtaac cacagnnntc cctttctctn 300
ctgactnatt aataatggct accattctta acangttaat ccaagtncag cncgtttaag 360
ggngnaaagg antcaagggt nggcggggtc atntncaagn tgcgtgtggn agtagtaatt 420
ctnctgnca cagtgggncc atttttgggt attttnnctn tnaantanan agggctantt 480
tnatcttggt gttgcagnct ttnc 504
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&lt;210&gt; 673

&lt;211&gt; 431

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (13)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (34)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (55)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature



602

<222> (103)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (113)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (114)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (412)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (422)  
<223> n equals a,t,g, or c

<400> 673  
aataccacaca ccnaacggga caaaaacctg gaanaccacc gaggtggcgg ccgcncatag 60  
aactagtgga acccccaggg ctgcaggaat tcgggcacga ggnagagcgg acnngtgagc 120  
agtactgagg cctcctctcc tctcctaacc tcgctctcgc ggcctagctt taccgcgccg 180  
cctgctcggc gaccagaaca ccttcacca tgaccacctc agcaagtcc cacttaaata 240  
aaggcatcaa gcagggtgtac atgtccctgc ctcagggtga gaaagtccag gccatgtata 300  
tctggatcga tgggtactgga gaaggactgc gctgcaagac ccggaccctg gacagtgagc 360  
ccaagtgtgt ggaagagttg cctgagtgga atttcgatgg ctctagtact tnacagtctg 420  
anggttccag t 431

<210> 674  
<211> 370  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (22)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (23)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (29)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (33)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (81)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (114)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (238)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (260)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (267)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (282)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (309)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (310)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (360)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (369)

<223> n equals a,t,g, or c

<400> 674

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cgggcgggaa agtcaagata cnnqctttnc tancttggtg gagagagtta tccaacaatt 60
ggaaggtgct tttgcacttg ngtttaaaag tgttcatttt cccgggcaag cagntggcac 120
aaggcgaggt agccctctgt tgattggtgt acggagtga cataaacttt ctactgatca 180
cattcctata ctctacagaa caggcaaaga caagaaagga agctgcaatc tctctcngt 240
ggacagcaca acctgccttn tcccggngga agaaaaagca gnggagtatt actttgcttc 300
tgatgcaann gctgcataga acacaccaat cgcgtcatct ttctggaaga tgatgatgt 360
gcagcaagna 370
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<210> 675

<211> 363

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (49)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (50)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (65)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (99)

<223> n equals a,t,g, or c

<220>

605

<221> misc feature  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (212)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (215)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (298)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (316)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (318)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (325)  
<223> n equals a,t,g, or c

<220>  
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<222> (329)  
<223> n equals a,t,g, or c

<400> 675  
ggcanagaga agagagagag agagagagag agactcgtaa ttcggcagnn cccccangta 60  
cagtncccttc aagcctacaa gccccgagag aatgatgant tggcactgga gaaagccgac 120  
gtggtgatgg tgactcacca gagcagtgca cggctggctg gagggcgtga ggctctcaga 180  
cggggagcga ggctggtttc ctgtgacagc nntgngagtt catttccaac ccagaggtcc 240  
gtgacacaga acctgaaggg aagcttcacg gagtgcaaga cttgccaaac tacagctngt 300  
gggaacagca agcctnantt ttctnctgna gaaggagttt tcgtgagctg gaagaacaag 360  
ttg 363

<210> 676  
<211> 441  
<212> DNA

606

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (214)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (353)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (397)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (404)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (413)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (440)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (441)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 676

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ccgaggacca gcgcaacgag gagaaggcgc acgtgaggcc aacaaaaaga tcgagaagca 60
gctgcagaag gacaagcagg tctaccgggc caccgaccgc ctgctgctgc tgggtgctgg 120
agaatctggt aaaagcacca ttgtgaagca gatgaggatc ctgcatgtta atgggtttta 180
tggagacagt gagaaggcaa ccaaagtgcg gganatcaaa aacaacctga aagaggcgat 240
tgaaaccatt gtggccgcca tgagcaacct ggtgcccccc gtggagctgg ccaaccccg 300
aaaccagttc agagtggact acatcctgag tgtgatgaac gtgcctgact ttnacttccc 360
tcccgaattc tatgagcatg ccaaggctct gtggggangat gaangagtgc gtnccctgcta 420
cgaacgctcc aacgaatacn n 441
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&lt;210&gt; 677

&lt;211&gt; 550

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

607

<220>  
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<222> (217)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (429)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (482)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (484)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (487)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (523)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (542)  
<223> n equals a,t,g, or c

<400> 677  
gcgactcgca ggcagggcc accaaggatg cgggtgtgat cgcggggctc aacgtgctgc 60  
ggatcatcaa cgagcccacg gccgccgcca tcgcctacgg cctggacaga acgggcaagg 120  
gggagcgcaa cgtgctcatc tttagacctg gcgggggcac cttcgacgtg tccatcctga 180  
cgatcgacga cggcatcttc gaggtgaagg ccacggncgg ggacaccac ctgggtgggg 240  
aggactttga caacaggctg gtgaaccact tcgtggagga gttcaagaga aaacacaaga 300  
aggacatcag ccagaacaag cgagccgtga ggcggctgcg caccgctgcg agagggccaa 360  
gaggaccctg tcgtccagca cccagggcag cctggagatc gacttccttg ttttgagggc 420  
atcgacttnt acacgttcat caccagggcg aaggttcgaa ggagctgtgc ttccgacctt 480  
gntnccnaaa caccctggg aacccctggg gaaaaaaggc ttnttgcgcc gaaaggccca 540  
ancttgggac 550

<210> 678  
<211> 435  
<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (47)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (55)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (134)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (295)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (330)

<223> n equals a,t,g, or c

<220>

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<222> (333)

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<220>

<221> misc feature

<222> (344)

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<220>

<221> misc feature

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<220>

<221> misc feature

<222> (385)

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<220>

<221> misc feature

<222> (401)

<223> n equals a,t,g, or c

<220>  
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<222> (423)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (434)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (435)  
<223> n equals a,t,g, or c

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gtaactattg gaatcaaggc tatggcaact atggatataa cagccaaggt tacggtggtt 120  
atggaggata tggntacac tggttacaac aactactatg gatatggtga ttatagcaac 180  
cagcagagtg gttatgggaa ggtatccagg cgaggtggtc atcaaaatag ctacaaacca 240  
tacttaaatt attccatttg caacttatcc ccaacaggtg gtgaagcata ttttnccatt 300  
tgaaggttcc tttagagggg gtcctgccc ngncttaatt ggcnttccaa ctaaattttt 360  
gggtatccag tccccnatgg gagtntgcgg tggggccccc nggagtttaa ttcgggggtcc 420  
ccntaaagga tttnn 435

<210> 679  
<211> 390  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (164)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (217)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (287)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (330)  
<223> n equals a,t,g, or c



610

<220>  
<221> misc feature  
<222> (333)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (371)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (390)  
<223> n equals a,t,g, or c

<400> 679  
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tccctggaag ctccctgcatg gcagctctga cagtgcact gatggtgctg aactccccac 120  
tggtcttggc tggggacacc cgaccacgtt tcttgagca ggtnaaacat gaatgtcatt 180  
tcttcaacgg gacggaacgg gtgcggttcc tggacanata cttctatcac caagaagaat 240  
acgtgcgctt cgacagcgac gtgggggaat accgggcggt gacgganctg gggcggccta 300  
actccgaata ctggaacagc cagaaagacn ccngggacag aagcgggccg cggaggacac 360  
ctactgcaga nacactacgg ggttgggtgn 390

<210> 680  
<211> 343  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (2)  
<223> n equals a,t,g, or c

<220>  
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<222> (3)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (8)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (11)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (18)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (121)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (122)  
<223> n equals a,t,g, or c

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<220>  
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<222> (158)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (160)  
<223> n equals a,t,g, or c

<220>  
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<222> (175)  
<223> n equals a,t,g, or c

<220>  
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<222> (197)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (202)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (223)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (240)

612

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (272)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (278)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (280)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (292)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (331)

<223> n equals a,t,g, or c

<400> 680

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cagattatgc cattgccagg cgcatagtag atttgcatc aagaattgag gaatcaattg 120
nnaatatcta tncctcgat gatatcagaa gatatctncn ctatgcaaga aagtntaaac 180
ccaagaattc caaagantca gnggacttca ttgtggagca atntaaacat ctccgcccgn 240
aagatgggtt ctggagtagc ccagtcttca tngagggnrn cagttgcggc cncattgagg 300
gccttggtac cgtctctctt ggaagccaat ngctccgggt gcc 343
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<210> 681

<211> 523

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

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<220>

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<222> (17)

<223> n equals a,t,g, or c

<220>

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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (25)  
<223> n equals a,t,g, or c

<220>  
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<222> (72)  
<223> n equals a,t,g, or c

<220>  
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<222> (141)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (383)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (442)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (487)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (500)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (503)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (514)  
<223> n equals a,t,g, or c

<400> 681  
natcttccgt gacactnttg anggnacgcc cgcaggtacc cggtcaggaa ttcccgggtc 60

614

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gacccacgcg tncgccaat tttaccaatc tatcacccta tagaagagct aatgttagta 120
taagtaacat gaaaacattc ncctccgcac aagcctgcgt cagattaaaa cactgaactg 180
acaattaaca gcccaatata tacaatcaac caacaagtca ttattaccct cactgtcaac 240
ccaacacagg catgctcata aggaaagggt aaaaaaagta aaagggaactc ggcaaattct 300
accccgccctg tttaccaaaa acatcacctc tagcatcacc agtattagag gcaccgcctg 360
cccagtgaca catgtttaac ggncgcggta ccctaaccgt gcaaaggtag cataatcact 420
tggtccttaa ttagggacct gnatgaatgg ctccacgagg gtcagctggc tcttactttt 480
aaccagnгаа attgacctgn cgngaagagg cggnatgaca cag 523
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&lt;210&gt; 682

&lt;211&gt; 713

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (423)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (583)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (595)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (605)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (626)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (633)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (640)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

<222> (646)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (660)

<223> n equals a,t,g, or c

<400> 682

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ggtcaaccca acacaggcat ggtcataagg aaagggttaa aaaagtaaaa ggaactcggc 60
aaatcttacc cgcctgttt accaaaaaca tcacctctag catcaccagt attagaggca 120
ccgcctgccc agtgacacat gtttaacggc cgcggtaccc taaccgtgca aaggtagcat 180
aatcacttgt tccttaaata gggacctgta tgaatggctc cagaggggtt cagctgtctc 240
ttacttttaa ccagtgaat tgacctgccc gtgaagaggc gggcatgaca cagcaagacg 300
agaagaccct atggagcttt aatttattaa tgcaaacagt acctaacaaa cccacaggtc 360
ctaaactacc aaacctgcat taaaaatttc ggttggggcg acctcggagc agaaccaaac 420
ctncgagcag tacatgctaa gacttcacca gtcaaagcga actactatac tcaattgac 480
caataacttg accaacggaa caagttaccc tagggataac agcgcaatcc tattctagag 540
tccatatcaa caataggggt tacgaacctc gatgtttgat cangacattc ccatngtgca 600
gcccnctatt taaaagggtc gttgntcac gantaaaggc cctacntgaa ctgagttcan 660
aaccggagta aattccaagg cgggttttta tctaccttaa aattcccccc tgg 713
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<210> 683

<211> 289

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (15)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (28)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (73)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (80)

<223> n equals a,t,g, or c

616

<220>  
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 <222> (225)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (237)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (240)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (252)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (287)  
 <223> n equals a,t,g, or c

<400> 683  
 tccccntact aaagngaaca aaagctgnag ctccaccgcg gtggcgggcg ctctagaact 60  
 agtggatccc ccnggctgcn tgaattcggc acgagcggca cgaggccctg cggggtgtac 120  
 accccccgtt gcggtctggg cctgctctgc taccgcccc gaggggtgga gaagcccctg 180  
 cacacactga tgcacgggca aggcgtgtgc atggagctgg cgganatcga ggccatncan 240  
 gaaagcctgc anccctctga caaggacgag ggtgaccacc ccaacanca 289

<210> 684  
 <211> 464  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (4)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (353)  
 <223> n equals a,t,g, or c

<400> 684  
 ggagagccc agccctggga ttttcaggtg gtttcatttg gtgaacagga ctgaacagag 60  
 agaactcacc atggaatttg ggctgagctg gctttttctt gtggctattt taaaagggtg 120

```
ccagtgtgag gtgcaattgg tggagtctgg gggaggcttg gtacagcctg gggggtcct 180
gagactctcc tgtacagtct ctggattcac ctttcgcaac tatgcatga gttgggtccg 240
ccagggtcca ggaaggggc tggaatgggt ctcagcaatt gacggtagt gttataacac 300
atactacgag aggtccctgc agggccgctt tagtgtctcc agagacaatt ccnagaacac 360
actatatctg caaatgaaca gcctgggagc cgaggacacg gccatctatt attgtgcgaa 420
gacagaacgt atgggtactg gctggtacgg acgaaatgac tact 464
```

<210> 685

<211> 545

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (14)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (16)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (326)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (428)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (438)

<223> n equals a,t,g, or c



618

<220>  
 <221> misc feature  
 <222> (442)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (456)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (457)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (505)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (509)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (536)  
 <223> n equals a,t,g, or c

<400> 685  
 attgantccn ttananaccn cctttatacg actcactata gggaaagctg gtacgcctgc 60  
 aggtaccggt ccggaattcc cgggtcgacc cagcggtccg gaccgtcacc cctggagaga 120  
 cggcctccat ctctgcagg tctagtcaga ccctcctgca tgtcaatgga cacaactatt 180  
 tggattggta catgcagaag ccagggcagc ctccacagct cgtgggtctat aggggttcca 240  
 atcgggcctc cggggtccct gacaggttca gtggcggtgg atcaggcaca gattttacac 300  
 ttagaatcac cacggtggag gctgangatg ttggcggtta ttactgcatg caagctctac 360  
 aaagtccgta cacttttggc caggggacca agctggagat caaacgaact gtgggctgca 420  
 ccattctgnt tcattctncc gncatctgat gaacanntga aatctggaac tgcctctggt 480  
 gggggcctgc tgaataactt ctatnccana gagggccaaa gtaccagtgg aaaggnggga 540  
 taacg 545

<210> 686  
 <211> 496  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> misc feature  
 <222> (358)

619

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (417)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (460)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (472)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (481)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (488)

<223> n equals a,t,g, or c

<400> 686

```
ctactaaagg gaacaaaagc tggagctcca ccgcggtggc ggccgctcta gaactagtgg 60
atcccccggg ctgcaggaat tcggcacgag cggctggggc ctgaggatca gccgcttcct 120
gcctggattc cacagcttcg cgccgtgtac tgcgccccca tccctgcgcg cccagcctgc 180
caagcagcgt gccccggttg caggcgatcat gcagcggggc cgaccacgc tctgggccgc 240
tgcgctgact ctgctggtgc tgctccgcgg gccgcccgtg gcgcgggctg gcgcgagctc 300
gggggggcttg ggtcccgttg tgcgctgcga accgtgcgac gcgcgtgcac tggcccantg 360
cgcgcttcc gcccgccgtg tgcgccggaa cttggtgcgc caagccgggc ttgcggntgc 420
tgcttgacgt gcgcactgag cgaagggccca gccgtgcggn atctacaccg ancgtgtgg 480
nttccggnct tcgttg                                     496
```

<210> 687

<211> 476

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (3)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (7)

620

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (56)

<223> n equals a,t,g, or c

<400> 687

```
gcncganacn aaccctcact aaagggaaca aaagctggag ctccaccgcg gtgcgnccgc 60
tctagaacta gtggatcccc cgggctgcag gaattcggca cgagattgat gacaccaata 120
tcacacgact gcagctggag acagagatcg aggcctctcaa ggaggagctg ctcttcatga 180
agaagaacca cgaagaggaa gtaaaaggcc tacaagccca gattgccagc tctgggttga 240
ccgtggaggt agatgcccc aaatctcagg acctcgccaa gatcatggca gacatccggg 300
cccaatatga cgagctggct cggaagaacc gagaggagct agacaagtac tgggtctcagc 360
agattgagga gagcaccaca gtggtcacca cacagtctgc tgaggttga gctgctgaga 420
cgacgctcac agagctgaga cgtacagtcc agtccttgga gatcgacctg ggactt 476
```

<210> 688

<211> 483

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (4)

<223> n equals a,t,g, or c

<400> 688

```
anantaaccc tcactaaagg gaacaaaagc tggagctcca ccgcggtgcg gccgctctag 60
aactagtgga tccccgggc tgcaggaatt cggcacgagc aggttcccgc ccggaagaag 120
cgaccaaagc gcctgaggac cggcaacatg gtgcggtcgg ggaataaggc agctgttgtg 180
ctgtgtatgg acgtgggctt taccatgagt aactccattc ctggtataga atccccattt 240
gaacaagcaa agaagtgat aaccatggtt gtacagcgac aggtgtttgc tgagaacaag 300
gatgagattg ctttagtccct gtttggtaca gatggcactg acaatcccct ttctgggtgg 360
gatcagtatc agaacatcac agtcacaga catctgatgc taccagattt tgatttgctg 420
gaggacattg aaaagcaaaa tccaaccagg ttctcaacag gctgacttcc tgggatgcac 480
taa 483
```

<210> 689

<211> 339

<212> DNA

621

<213> Homo sapiens

<220>

<221> misc feature

<222> (109)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (135)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (155)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (236)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (260)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (280)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (289)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (337)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (338)

<223> n equals a,t,g, or c

<400> 689

aggcaggagg aagccgatcg aaaactcaga gaggaggaag agaagaggag gctaaaggaa 60  
gagattgaaa ggcgaggagc agaagctgct gagaaacgcc agaagatgnc agaagatggc 120  
ttgtcagatg acagnaaacc attcaagtgt ttcantccta aaaggttcat ctcttcaaga 180

622

tagaagagcg agcagatttt tgattaagtc tgtgcagaaa agcagtgggtg ttcaantcga 240  
cccttcaagc agcattagtn ttccaagttt gacagcagan tggagcatnt taccatggca 300  
tttgagggga ccaaaagcag ccaaaacctt aaaaaanna 339

&lt;210&gt; 690

&lt;211&gt; 594

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (473)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 690

gntgctttct ccaccagaag ggcacacttt catctaattt ggggtatcac tgagctgaag 60  
acaaagagaa gggggagaaa acctagcaga ccaccatgtg ctatgggaag tgtgcacgat 120  
gcatcggaca ttctctgggtg gggctcgccc tctgtgcat cgcggctaata attttgcttt 180  
actttcccaa tggggaaaca aagtatgcct ccgaaaacca cctcagccgc ttcgtgtggt 240  
tcttttctgg catcgtagga ggtggcctgc tgatgctcct gccagcattt gtcttcattg 300  
ggctggaaca ggatgactgc tgtggctgct gtggccatga aaactgtggc aaacgatgtg 360  
cgatgctttc ttctgtattg gctgctctca ttggaattgc aggatctggc tactgtgtca 420  
ttgtggcagc ccttggttta gcagaaggac cactatgtct tgattccctc ggncagtggg 480  
actacacctt tgccagcacc gagggccaag taccttctgg ataccttcac atgggtccgag 540  
tgactgaac ccaacacatt ggggaatgga atggatctct ggtttctatc ctct 594

&lt;210&gt; 691

&lt;211&gt; 538

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (6)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (9)

&lt;223&gt; n equals a,t,g, or c

623

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (55)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 691

```
ganganacna accctcacta aagggaacaa aagctggagc tccaccgcg tgcgnccgct 60
ctagaactag tggatccccc gggctgcagg aattcggcac gagcgcatga ctttgtcttc 120
tccgcacgac tggtacagag gtctccagag ctttctctct cctgtgcaaa atggcaactc 180
ttaaggaaaa actcattgca ccagttgcgg aagaagaggc aacagttcca aacaataaga 240
tcaactgtagt ggggtgttga caagttggta tggcgtgtgc tatcagcatt ctgggaaagt 300
ctctggctga tgaacttgct cttgtggatg ttttgaaga taagcttaaa ggagaaatga 360
tggatctgca gcatgggagc ttatttcttc agacacctaa aattttggca gataaagatt 420
attctgtgac cgccaattct aagattgtag tggtaactgc aggagtccgt cagcaagaag 480
gggagagtcg gctcaatctg gtgcagagaa atgttaatgt cttcaaattc attattcc 538
```

&lt;210&gt; 692

&lt;211&gt; 201

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (125)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (143)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (161)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (165)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (183)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 692

```
gctcattgcc acgcgcccc gacgaccgcc cgacgtgcat tcccgattcc ttttggttcc 60
aagtccaata tggaactct aaaggatcag ctgatttata atcttctaaa ggaagaacag 120
accnccaga ataagattac agntgttggg gttggtgctg ntggnatggc ctgtgccatc 180
aanatcttaa tgaaggactt g 201
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<210> 693  
<211> 589  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (2)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (23)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (271)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (312)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (342)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (354)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (377)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (401)  
<223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (424)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (437)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (466)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (491)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (551)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (571)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (572)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (576)  
 <223> n equals a,t,g, or c

<400> 693  
 nncaaaaagt acctaggtga cantatagaa ggtacgcctg caggtaccgg tccggaattc 60  
 ccgggggttgt taacttgttt attgcagctt ataatgggtta caaataaaagc aatagcatca 120  
 caaatttcac aaataaaagca tttttttcac tgcattctag ttgtggtttg tccaaactca 180  
 tcaatgtatc ttatcatgtc tggatcgatc ctgcattaat gaacggccaa cgcgcgggga 240  
 gaggcggttt gcgtattggc tggcgtaata ncgaaaagcc cgcaccgatc gcccttccca 300  
 acagtgcgc ancctgaatg gcgaatggga cgcgccctgt ancggcgcat taancgcggc 360  
 ggggtgtggtg gttaccncaa cgtgaccgct acacttgcca ncgccctaac gcccgctcct 420  
 ttcnctttct tcccctncct ttctcccca cgttcgcg ccggttncct gtcaaaactct 480  
 aaatccgggg ntccccttta agggttccca atttaattgc ttaacggcac ctccaacccc 540  
 aaaaaaactt naataagggg tgaatggttc nntantttgg gccaccccc 589



<210> 694  
<211> 386  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (59)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (135)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (149)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (173)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (202)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (204)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (244)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (326)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (340)  
<223> n equals a,t,g, or c

627

<220>  
<221> misc feature  
<222> (369)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (370)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (383)  
<223> n equals a,t,g, or c

<400> 694  
ggcaaaagcat ggggcagcga gtgtgagaaa tgccctctgc ctggcacaga ggccttcana 60  
gagatctgcc ctgccggcca cggctacacc tacgcgagct ccgacatccg cctgtccatg 120  
aggaaagccg aggangaaga actggcaang cccccaaggg agcaaggga gangagcagc 180  
tgggcactgc cggggccaac ananaagcag cccctccggg ttcgtcacgg acacctggct 240  
tgangccggg accatccctg acaaggttga ctctcaagct ggccaggtca cgaccagtgt 300  
cactcatgca cctgcctggg tcacangga atgccaçaan cccaccaat gcctgaacag 360  
ggaattgcnn aaaattccgg aaaaaa 386

<210> 695  
<211> 475  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (231)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (278)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (423)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (459)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (463)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (465)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (466)

<223> n equals a,t,g, or c

<400> 695

```

ggttcacagc atatattggt ggattcttgt ccatagtgc tctgctttaa gaattaacga 60
aagcagtgtc aagacagtaa ggattcaaac catttgccaa aaatgagtct aagtgcattt 120
actctcttcc tggcattgat tggtggtacc agtggccagt actatgatta tgattttccc 180
ctatcaattt atgggcaatc atcaccaaac tgtgcaccag aatgtaactg ncctgaaagc 240
taccacaagt ccatgtactg tgatgagctg aaattganaa gtgtaccaat ggtgcctcct 300
ggaatcaagt atctttacct taggaataac cagattgacc atattgatga aaaggccttt 360
gagaatgtaa ctgatctgca gtggctcatt ctagatcaca accttctaga aaactccaag 420
atnaaaggga gagttttctc taaattgaaa caactgaana agntnntata accac      475

```

<210> 696

<211> 444

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (402)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (410)

<223> n equals a,t,g, or c

<400> 696

```

tatcaagtgt actccaaaat ccaggcaaca aacacatggc tgtttctaag tagctgtaac 60
ggaaatgaaa cttctctttg ggactgcaag aactggcaat ggggtggact tacctgtgat 120
cactatgaag aagccaaaat tacctgctca gccacaggg aaccagact ggttgaggag 180
gacattccct gttctggacg tgttgaagtg aagcatggtg acacgtgggg ctccatctgt 240
gattcagact tctctctgga agctgccagc gttctatgca gggaattaca gtgtggcaca 300
gttgtctcta tcctgggggg agctcacttt ggagagggaa tggacagatc tgggctgaag 360
aattccagtg ttgagggaca tgaatcccca tctttcatct tnccagtagn aaccccgccc 420
aaaaggaact tgtagccaca gcaa      444

```

<210> 697

<211> 411

<212> DNA

629

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (104)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (305)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (338)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (370)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (375)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (391)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (410)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 697

```
aacatggcgg gtgtggagga ggtagcggcc tccgggagcc acctgaatgg cgacctggat 60
ccagacgaca gggaagaagg agctgcctct acggctgagg aaanagccaa gaaaaaaga 120
cgaaagaaga agaagagcaa agggccttct gcaggtaaag agagttttat gttttcccag 180
tcccctccgg gaacggctga actgtttggc tcaggcccgt tgagggggcc gggaccgggg 240
ccccagagcc ccgactagac tgattcttgg gcctgacagg gtggcaaagc cgggctatag 300
atcanggtgc acctgagctt tctctgatgt atgcccangc agatctccag gtattcagag 360
cacctgcttn cccancctgt tagtcttagt nacccaaccc tcctgtgcan a 411
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&lt;210&gt; 698

&lt;211&gt; 135

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

630

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<220>  
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tgcgtgtgat taggg 135

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<212> DNA  
<213> Homo sapiens

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ttgggggattt cattatatgc agagcagcct gcaaaaggag aggtgtggag cgaagatgtc 180  
cgaaaactgg ctgttgttca tgaatctgaa ggattgttgg ggtacattta ctgtgatttt 240  
tttcagcgag cagacaaacc acatcaggat tgccatttca ctatccgtgg aggcagacta 300  
aaaggaagat gggagactat ncaactccca gttgtaagtt cttatgctgg aatcttcccc 360  
gttcccgnna gggagtcttc caactttggc naangcctgg gcatgatggg aaaacctttc 420  
ccagganggg ggac 434

<210> 700  
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632

<212> DNA  
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gtaaaatttg gtgcagatgc ccgagcctta atgcttcaag gtgtagacct tttagccgat 180  
gctgtggccg ttacaatggg gccaaagga agaacagtga ttattgagca gagggtggga 240  
agtcccaaag taacaaaaga tgggtgtgact gttgcaaagt caattgactt aaaagataaa 300  
tacaagaaca ttggagctaa acttgttcaa gatgttgcca ataacacaaa tgaagaagct 360  
ggggatggca ctaccactgc tactgtactg gcacgctcta tagccaagga aggccttcgag 420  
aagattagca aaggt 435

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<212> DNA  
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tgtggccggtt acaatggggc caaaggggaag aacagtgatt attgagcaga gttggggaag 120  
tcccaaagta acaaaagatg gtgtgactgt tgcaaagtca attgacttaa aagataaata 180  
caagaacatt ggagctaaac ttgttcaaga tgttgccaat aacacaaatg aagaagctgg 240  
ggatggcact accactgcta ctgtactggc acgctctata gccaaaggaag gcttcgagaa 300  
gattagcaaa ggtgctaatac cagtggaaat caggagaggt gtgatgttag ctgttgatgc 360  
tgtaattgct gaacttaaaa agcagtctaa acctgtgacc acccct 406

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633

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cattgccgga aagtcaacga gttatctgga acaaccccc gatgcctggg gcactggggg 180  
ccagcggaac agcggccacg aantctctgc gctangcggg tgaggtggcn tgcagagcnt 240  
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ataaaatgac agtttgaaca taaaaaacc accccattcc tccccacact catcgccctt 120



634

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accacgctac tcctacctat ctcccccttt atactaataa tcttataaaa aaaaaaaaaa 180
aaaaaaaaaa aaangggggg gccgggnncc natttngccc aaaggggggg ggttttaaaa 240
ttca                                                    244
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&lt;210&gt; 704

&lt;211&gt; 462

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

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&lt;222&gt; (7)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (45)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (102)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (162)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (168)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (183)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (186)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (189)

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gcccacctgg tccggcgcta cctgggcgat gcctcgggtg ancccgaccc cctgcagatg 120  
ccaaccttcc cgccagacta cggcttcccc gaacgcaagg ancgcganat ggtggccaca 180

637

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cancangana tgatggacgc gcactnaagc tccanctgcg ggantactgc gcccaccaac 240
tcatccgggt gctcaattnc aaccttaaan cttccccac ttccttggt tgcnaccag 300
gaacgggaca aatnggaata ntnccaaaca cccanaant tttntnccc ttaaanant 360
tttaaacgga aacgaagggt ntcccccccg gaaaaaaaaac nggggnaaaa aaaggggaaa 420
tttttnccc cccccccg ccnggaaatt tcccccccg tt 462
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&lt;210&gt; 705

&lt;211&gt; 436

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 705

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ggtgttgcg ctttataagc gggcgctacg ccacctcgag tcgtggtgcg tccagagaga 120
caaataccga tactttgctt gttgatgag agcccggtt gaagaacata agaataaaa 180
ggatatggcg aaggccaccc agctgctgaa ggaggccgag gaagaattct ggtaccgtca 240
gcatccacag ccatacatct tccctgactc tcctgggggc acctcctatg agagatacga 300
ttgtacaag gtcccagaat ggtgcttaga tgactggcat cttctgaga aggcaatgta 360
tcctgattac ttgccaaga gagaacagtg gaagaaactg cgggagggaa agctgggaac 420
gagaggttaa gcagct 436
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&lt;210&gt; 706

&lt;211&gt; 487

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (26)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (34)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (45)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (51)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

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&lt;223&gt; n equals a,t,g, or c

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640

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agngcctgcg tncgtgagaa ttcagcatgg aatgactcta ctatttnctg ggatttctgn 120  
tnctggntgn aagattgcca cttgatgccg ccaaacgatt ncatgatgag ctgggnaatg 180  
aaagaccttn tgcttacatg anggagcaca atcaattaaa tggctggtnt tctgatgaaa 240  
atgactggaa tgaaaaactc taccagtggt ggaagcggng agacatgang tgngaaaaac 300  
tgctggaagg gaggcccggtg tgcaaggcgg tcctgaccag ngactnacca acccttgng 360  
ggctcaaata naacattngc cggngaacct gatattccct aaangccaaa aggaagaagc 420  
caatggcaac ataggctatg anaagaactg ganaaatgaa gctgggntaa acagctgaac 480  
canaagg 487

<210> 707  
<211> 414  
<212> DNA  
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<220>  
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641

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tatcttttcg gttgtgaact aaaggccgac aaagattatc actttaagggt ggataatnat 180  
gaaaatgagc accagttatc tttaagaacg gtcngtttng gggctggtgc aaaggatgag 240  
ttgcacattg ttgaagcaga ggcaatgaat tacgaaggca gtccaattaa agtaacactg 300  
gcaactttga aaatgtctgt acagccaacg gttttcccct tgggggcttt gaataacacc 360  
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<223> n equals a,t,g, or c



642

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<220>  
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gctttctttt taatcccctg catcgcatca ccggcgtgcc ccaccatgtc agacgcagcc 180  
gtagacacca gctccgaaat caccaccaag gacttaaagg agaagaagga agttgtggaa 240  
gaggcagaaa tggaagagac gccctgctaa cgggatgcta atgaggnaat ggggagcagg 300  
aggtgacatg aggtagccga gaagaggaag aagtngggag aanagagaga anaanaagtt 360

<210> 709  
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643

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<222> (183)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

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<220>  
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ggcccaccat ccggcgngg accttttccg ttagcgtggg tgatattgtt cctgctcgag 180  
gcncaaattg gtccttgna tctccttcca tctgccatt aactctcgca agtgccctccg 240  
ngaggaaatt cnc 253

<210> 710  
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<220>  
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646

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<220>

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<222> (483)

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<400> 710

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caatgatgct tttaagggaa tgactagtga agaaaaagaa attctgatac gggacaaaaa 120
tgctcttcaa aacatcattc tttatcacct acaccaggag ttttcattgg aaaaggattt 180
gaacctgggtg ttactaacat ttttaaagac cacacaaggn agcaaaatct ttctggaagg 240
aagtgaatg gttacacttc tggatgaatg atttggaat ccaaaagant ctgacatcca 300
tggncacca anggtggtaa tttcatgttg taggttaaac tncncttttc cagcagncac 360
accttttggg natgntcaa ctggtnggga tacttgatta tttnatncaa tnnctcccn 420
atttaagggt ttttcgggg tgggcccctt caagggaatn ccngggctnt ttttnacac 480
ctnaattttt tcccc                                     496
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<210> 711

<211> 461

<212> DNA

<213> Homo sapiens

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<222> (337)

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<220>

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<222> (364)

<223> n equals a,t,g, or c

<400> 711

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tgcccagtgt atcttgatg ctgctttcct gcctcatgct gctgtctcag gttcaagggtg 180
aagaacccca gaggggaactg ccctctgcac ggatccgctg ncccaaaggc tccaaggcct 240
atggctccca ctgctatgcc ttgtttttgt caccaaaatc ctggacagat gcagatcttg 300
cctgccagaa gcggccctct ggaaacctgg tgtctgngct cagtggggct gagggatcct 360
tcgngcctcc ctggtgaaga gcattggtaa cagctactca tacgtctgga ttgggctcca 420
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<222> (389)

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tggctctcggg gacctccgca gcagctcccc agggcccacg ggccagcccc gccgccctcg 180  
caacctggca gccgccgccg tggaagagca gtatagctgt gactatggat ctggcagatt 240  
ctttatcctt tgtggacttg gaggaattat tagctgtggc acaacacata cagcattggg 300  
tcctctagat ctggttaaat gcagangcag gtttgttttt gcatgctgga cttagagcna 360  
ttgaagcntg actgangtta agtattagna ta 392

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<211> 734  
<212> DNA  
<213> Homo sapiens

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 gatgaacgtc tccggaaaga gttttctcca tttggtacaa tcactagtgc aaaggttatg 180  
 atggagggtg gtcgcagcaa agggtttggg tttgtatgtt tctcctcccc agaanaagcc 240  
 actaaagcag ttacanaaat gaacggtaga attgtggcca caaagccatt gtatgtagct 300  
 ttagctcagc gcaaagaaga gcgccaggct cacctcacta accagtatat gcagagaatg 360  
 gcaagtgtac ganctgttcc caaccctgta atcaaccct accagccagc acctccttca 420  
 ggttacttca tggcagctat cccacagact cagaacgtgc tgcatactat cctcctagcc 480  
 aaattgctca actaanacca agtcctcgct ggactgctca gggtgccata actcatccat 540  
 tccaaaatat gcccggtgct atccgcccag ctgctcctan aacaccattt agtactatga 600  
 naacagcttc ttctcagcaa catcttaatg cacagccaca anttacaatg cacancctgc 660  
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<210> 714  
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<220>  
 <221> misc feature



650

<222> (7)  
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gtttttaaac aaagtgactg aggcacagga agatggccag tcaacttctg aattgattgg 180  
ccagtttggt gtcggtttct attccgcctt ccttgtagca gataaggta ttgtcacttc 240  
aaaacacaac aacgataccc agcacatctg ggagtctgac tccaatgaat tttctgtaat 300  
tgctgacceca agaggaaaca ctctaggacg gggaacgaca attacccttg tcttaaaaga 360  
agaagcatct gattaccttg aattggatag aattaaat ctcgtcaaaa aatattcaca 420

gttcataaac tttcctatatt atgtatggng cagcaagact gaaactgttn aggagcccat 480  
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<210> 715

<211> 491

<212> DNA

<213> Homo sapiens

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653

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<220>  
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<223> n equals a,t,g, or c

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cagccctcat ctctcgcagt gttatcggaa ccacatttga gggacgcgct atttacctcc 180  
tgaaggttgg caaagctgga caaaataagc ctgccatttt catggactgt gggtttccca 240  
tgccaganan ttggatttct ccctgcattc ngccagtngg tttntaaaa aangcgggtc 300  
ccttcctatn gacntttana ncccanttga caaacttcnc caacaattta aanttttatn 360  
ttcccgccct gtggcccca tattgaagg caacttcnac cccgggaacn aaaaccaat 420  
tntggaaaaa aaaaccccc cccccctgg tgggattctt gctttggttg ggnnccaccc 480  
caaaaaaatt t 491

<210> 716  
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<212> DNA  
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654

<220>  
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<220>  
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<223> n equals a,t,g, or c

<220>  
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<222> (322)  
<223> n equals a,t,g, or c

<220>  
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gctaccgggt gtgcggcagc gacggcacca cctaccggag cggctgccag ctgcgcgccg 120  
ccagccagag ggccgagagc cgcggggaga aggccatcac ccaggtcagc aagggcacct 180  
gcgagcaagg tccttcata gtgacgcccc ccaaggacat ctggaatgtc actggtgccc 240  
angtgtactt gagctgtgag gtcacggaa tcccgacacc tgtcctcatc tggaacaagg 300  
tanaaagggg tcactatgga nntcanagga c 331

<210> 717  
<211> 486  
<212> DNA  
<213> Homo sapiens

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<220>  
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655

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<223> n equals a,t,g, or c

<220>  
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gtgagcggtg gtggtttatt cttccgtgga gttaagggct ccgtggacat ctcaggtcct 180  
caggtgtctc catctggaac tatataaagt tcagaaaaca tgtctcgaga tatgactcca 240  
ggaccactat attttctcca gaaggtcgct tataccaagt tgaatatgcc atggaagcta 300  
ttggacatgc aggcacctgt ttgggaattt tagcaaatga tgggtgtttt cttgcagcag 360  
agagacgcaa catccacaag cttcttgatg aagtcttttt ttctgaaaaa atttataaac 420  
tcaatgagga catggcttgc agtgtggcag gcataacttt ctgatgctaa tgttctgact 480  
aatgac 486

<210> 718  
<211> 479  
<212> DNA  
<213> Homo sapiens

<220>  
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<223> n equals a,t,g, or c

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656

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acgagcgtgt atgagagccc ctacagcgac ccagaggagc tcaaggacaa gaagctcttc 180  
ctgaagcgcg ataacctcct catagctgac attgaacttg gctgcggcaa ctttggtca 240  
gtgcgccagg gcggtgtaccg catgcgcaag aagcagatcg acgtggccat caaggtgctg 300  
aagcagggca cggagaaggc agacacggaa gagatgatgc gcgaggcgca gatcatgcac 360  
cagctggaca acccctacat cgtgcggctc attggcgtct gccaggccga agccctcatg 420  
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<210> 719

<211> 572

<212> DNA

<213> Homo sapiens

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<222> (421)

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<222> (501)

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<221> misc feature

<222> (503)

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<222> (526)

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<222> (546)

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<222> (559)

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657

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tttccaggga atgaagaagc tctcctacat ccgcattgct gataccaata tcaccagcat 180
tcctcaagggt cttcctcctt cccttacgga attacatctt gatggcaaca aaatcagcag 240
agttgatgca gctagcctga aaggactgaa taatttggct aagttgggat tgagtttcaa 300
cagcatctct gctgttgaca atggctctct ggccaacacg cctcatctga gggagcttca 360
cttggaacaac aacaagctta ccagagtacc tgggtgggctg cagagcataa agtacatnca 420
nggtggctac cttcataaca accatatctc tgtagtggga tcaaagtgac ttctggccac 480
ctggacacaa ccacccaaaa ngnttcttaa ttccgggtgg gaagcntttt aacaaacccg 540
ggccangact ggggagaana cagccatcca cc 572
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&lt;210&gt; 720

&lt;211&gt; 487

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (3)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (376)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (447)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (459)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (460)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (467)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (468)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 720

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```
agggcagtgc cattgatagg aagcggcacc atgtactaca gacggctcat ccctcccctt 120
tgtcagtgtg tagaggggttc tttggatgta gacacttttc aaagaccaat gagctgctgc 180
agaagtcttg caagaagccc attgactgga aggagctgtg atcatcagct gaggggtggc 240
ctttgagaag ctgctgttaa cgtatttgcc agttacgaag ttccactgaa aattttccta 300
ttaattctta agtactctgc ataaggggga aaagcttcca gaaagcagcc atgaaccagg 360
ctgtccagga atggancctg tatccaacca caaacaacaa aggctaccct ttgacccaaa 420
tgtctttctc tgcaacatgg cttcggcnct aaatatgcnn aagacannat gagggccaat 480
acttaat 487
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<211> 464

<212> DNA

<213> Homo sapiens

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<220>

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<222> (312)

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<222> (349)

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<222> (415)

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<222> (436)

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<222> (443)

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<222> (448)

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<400> 721

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gccgccgtct cccgcgtgct gtctggcgct tctcagaagc cggcaagcag agtgctggta 180
gcatcccgta attttgcaaa tgatgctaca ttgaaatta anaaatgtga ccttcaccgg 240
ctggaagaag ccctcctgtc acaacagtgc tcaccaaggg aagatgggct caaatactac 300
aggatgatgc anactgtacc cgaatggaat tgaaacagat cactgtntna acagaaaatt 360
atontggttt ctgtccttgt gtgatgtcag aacttgctgt gtggcctgga gccgnatcac 420
cccaaact ctccanctac ggntccgntt atttncggg cttc 464
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<210> 722

<211> 320

<212> DNA

<213> Homo sapiens

<220>

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<222> (12)

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<220>

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<222> (43)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (113)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (142)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (152)

660

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (153)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (182)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (211)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (263)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (275)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (281)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (299)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (308)

<223> n equals a,t,g, or c

<400> 722

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gttgacacgc anctgcacgc gccgtggctc cggatctctt cgnctttgca gcgtagcccg 60
agtcggtcag cgccggatga cctcagcagc catgtcgaag ccccatagtg aanccgggac 120
tgccttcatt cagacccagc anctgcacgc anncatggct gacacattcc tggagcacat 180
gngccgcctg gacattgatt caccacccat nacaggcccg aacactggca tcatctgtac 240
cattggccca gcttcccgat cangtggaga cggtnaagga natgattaaa gcctggaang 300
aatgtggntc gtctgaactt                                     320
```

<210> 723

661

<211> 152  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (79)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (87)  
<223> n equals a,t,g, or c

<220>  
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<222> (111)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (127)  
<223> n equals a,t,g, or c

<220>  
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<222> (148)  
<223> n equals a,t,g, or c

<400> 723  
gcccaccatg gctgcaatcc gaaagaagct ggtgatcggtt ggggatgggtg cctgtgggaa 60  
gacctgcctc ctcacgtnt tcagcangga tcagtttccg gaggtctacg nccctactgt 120  
cctttgngaa ctatattgcg cacattgngg cg 152

<210> 724  
<211> 573  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (463)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (514)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

662

&lt;222&gt; (553)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (559)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (569)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 724

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gctgctatgt tcaatataag aaatattgga aagacgctcg tcaccaggac ccaaggaacc 60
aaaattgcat ctgatgtctt caagggctcg gtgtttgaag tgagtcttgc tgatttgag 120
aatgatgaag ttgcatttag aaaattcaag ctgattactg aagatgttca gggtaaaaac 180
tgccctgacta acttccatgg catggatctt acccgtgaca aaatgtgttc catggtcaaa 240
aaatggcaga caatgattga agctcacgtt gatgtcaaga ctaccgatgg ttacttgctt 300
cgtctgttct gtgttggttt tactaaaaaa cgcaacaatc agatacggaa gacctcttat 360
gctcagcacc aacaggtccg ccaaaccggg aagaagatga tggaaatcat gacccgagag 420
gtgcagacaa atgacttgaa agaagtggtc aataaattga ttncagacgc attggaaaaa 480
acatagaaaa ggcttggtcaa tctattatcc tctncatgat ggcttcgtta gaaaagtaaa 540
aatgctgaag aanccaagnt tgaatgggna aac 573
```

&lt;210&gt; 725

&lt;211&gt; 403

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (9)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 725

```
gcttgaaant aaccctcact aaaggggaaca aaagctggag ctccaccgcg gtgcggccgc 60
tctagaacta gtggatcccc cgggctgcag gaattcggca cgagtcctgg tccgcgccag 120
agcccagcgc gcctcgtcgc catgcctcgg aaaattgagg aaatcaagga ctctctgctc 180
acagcccagc gaaaggatgc caaatctgtc aagatcaaga aaaataagga caacgtgaag 240
tttaaagttc gatgcagcag atacctttac accctgggtc tctactgacaa agagaaggca 300
gagaaactga agcagtcctt gccccccggt ttggcagtga aggaactgaa atgaaccaga 360
cacactgatt ggaactgtat tatattaataa tactaaaaat cct 403
```

&lt;210&gt; 726

&lt;211&gt; 502

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

663

<222> (7)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (8)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (12)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (256)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (281)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (380)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (391)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (428)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (456)  
<223> n equals a,t,g, or c

<400> 726  
cgcaagnncg anactaacc tcactaaagg gaacaaaagc tggagctcca ccgcggtgcg 60  
gccgctctag aactagtga tccccgggc tgcaggaatt cggcacgaga gccatcaggt 120  
aagccaagat ggggtgcatac aagtacatcc aggagctatg gagaaagaag cagtctgatg 180  
tcatgcgctt tcttctgagg gtccgctgct ggcagtaccg ccagctctct gctctccaca 240  
gggctccccg ccccanccgg cctgataaaag cgcgccgact nggctacaag gccaagcaag 300  
gttacgttat atataggatt cgtgttcgac gtgggtggccg aaaacgcccc gttcctaagg 360  
gtgcaattac ggcaagcctn tccatcatgg ngttaaccag ctaaagtgtg ctcgaagcct 420

664

tcagtcenntt gcagaggagc gagctggacg ccactntggg gctctgagag tcctgaattc 480  
ttactggggtt ggtgaagatt cc 502

<210> 727

<211> 361

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (17)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (309)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (318)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (360)

<223> n equals a,t,g, or c

<400> 727

ggcacgagcg aacgcgnaga gcacgccatg aaggcctcgg gcacgctacg agagtacaag 60  
gtagtggggtc gctgcctgcc ccccccaaa tgccacacgc cgcccctcta ccgcatgcga 120  
atctttgcgc ctaatcatgt cgtcgccaag tcccgcttct ggtactttgt atctcagtta 180  
aagaagatga agaagtcctc aggggagatt gtctactgtg ggcagggtgt tgagaagtcc 240  
ccctgcggg tgaagaactt cgggatctgg ctgcgctatg actcccgag cggcaccac 300  
aacatgtanc gggaatancg ggacctgacc aacgcaggcg ctgtcaacca gtgtaacggn 360  
g 361

<210> 728

<211> 401

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (6)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (200)

<223> n equals a,t,g, or c

665

<220>  
<221> misc feature  
<222> (234)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (251)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (319)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (332)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (334)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (360)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (389)  
<223> n equals a,t,g, or c

<400> 728  
gaagangctc gcctctagtgc tcttccgctg tggcaagaag aagtctggtt agaccccaat 60  
gagaccaatg aaatcgccaa tgccaactcc cgtcagcaga tccggaagct catcaaagat 120  
gggctgatca tccgcaagcc tgtgacgggc cattcccggg ctcgatgccg gaaaaacacc 180  
ttggcccgcc ggaaaggcan gcacatgggc atagttagcg gaaaggtaca gccnatgccc 240  
gaatgccaaa naaggtcaca tggattaaga aaatgaagat tttgcgcccg ctgctcaaaa 300  
aatacgtgaa tcttaaaaana tcgatcgcca cntntttcac agcctgttcc taaagttaan 360  
ggaatttttt caaaaacaac cgattctcnt ggaacacttc c 401

<210> 729  
<211> 530  
<212> DNA  
<213> Homo sapiens

<220>



666

<221> misc feature  
<222> (7)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (10)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (12)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (14)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (60)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (527)  
<223> n equals a,t,g, or c

<400> 729  
gcacagngan ancnaaccct cactaaaggg aacaaaagct ggagctccac cgcggtgcgn 60  
ccgctctaga actagtggat cccccgggct gcaggaattc ggcacgagcc gccatcttcc 120  
agtaattcgc caaatgacg aacacaaagg gaaagaggag aggcacccga tatatgttct 180  
ctaggccttt tagaaaacat ggagttgttc ctttggccac atatatgcga atctataaga 240  
aaggtgatat tgtagacatc aagggaatgg gtactgttca aaaagggaatg cccacaagt 300  
gttaccatgg caaaactgga agagtctaca atgttaccga gcatgctgtt ggcattgttg 360  
taaacaaca agttaagggc aagattcttg ccaagagaat taatgtgcgt attgagcaca 420  
ttaagcactc taagagccga gatagcttcc tgaaacgtgt gaaggaaaat gatcagaaaa 480  
agaaagaagc caaagagaaa ggtacctggg ttcaactaaa gcgccancct 530

<210> 730  
<211> 375  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (33)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (55)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (87)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (97)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (111)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (121)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (124)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (125)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (142)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (181)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (183)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (190)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (198)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (206)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (229)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (241)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (248)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (262)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (269)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (284)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (322)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (333)

669

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (354)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (367)

<223> n equals a,t,g, or c

<400> 730

gggtggttgc tgccgaaatg ggcaagttca tgnaaccaag aaagtgggtgc ttgtncctggc 60  
tggacgctac tccggacgca aagctgntca tcgtaanaga acattgaatg ntggcacctc 120  
naanngcccc tacagccatg cncgtggtggc tgggaattga accgctaccc ccgcaaatga 180  
ncngctgccn tggggcanga agaagntcgc caggaggtca aagatatant cttttgtgaa 240  
ngtgtgtnac tacaatcacc tnatgcccnc aagggtactct gtgngatatt ccccttgggg 300  
caaagctgta cggttcattag gntgtcttcc ganattcctg gctcttaaac gctnggcccg 360  
aaggagnccc aggtc 375

<210> 731

<211> 207

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (143)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (177)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (187)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (201)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (207)

<223> n equals a,t,g, or c

670

&lt;400&gt; 731

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gcgcccgtgc gaagggagcc gccgccatgt ctgcgcattct gcaatggatg gtcgtgcgga 60
actgctccag tttcctgata aagaggaata agcagacctt cagcactgag cccaataact 120
tgaaggcccg caattccttc cgntacaacg gactgattca ccgcaagact gtgggcntgg 180
agccggnagc cgacggcaaa ngtgtcn 207
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&lt;210&gt; 732

&lt;211&gt; 702

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (10)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (620)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (628)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (655)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (686)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (690)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 732

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ggcagaatgn ctcccgcaaa gaagggtggc gagaagaaaa agggccgttc tgccatcaac 60
gaagtggtaa cccgagaata caccatcaac attcacaagc gcatccatgg agtgggcttc 120
aagaagcgtg cacctcgggc actcaaagag attcggaaat ttgccatgaa ggagatggga 180
actccagatg tgcgcattga caccaggctc aacaaagctg tctgggccaag aggaataagg 240
aatgtgccat accgaatccg tgtgcggctg tccagaaaac gtaatgagga tgaagattca 300
ccaaataagc tatatacttt ggttacctat gtacctgtta ccactttcaa aaatctacag 360
acagtcaatg tggatgagaa ctaatcgctg atcgctcagat caaataaagt tataaaattg 420
caaaaaaaaa aaaaaagggc ggccgctcta gaggatccaa gcttacgtac gcgtgcatgc 480
gacgtcatag ctcttctata gtgtcaccta aattcaattc actgccgtcg gtttacaacg 540
```

tcgtgactgg gaaaaccctg cgttacccaa cttaatcgcc ttgcagcaca tcccctttcg 600  
ccagctgcgt aataacgaan agggccgnac cgatcgccctt tccacagttg cgcancctga 660  
atggcggaatg gacgcgcctt taccgngcan taagcgccgc gg 702

<210> 733

<211> 441

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (62)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (99)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (101)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (118)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (126)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (152)

<223> n equals a,t,g, or c

<220>

<221> misc feature

672

<222> (185)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (212)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (260)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (310)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (356)  
<223> n equals a,t,g, or c

<400> 733  
naattaaccc tcactaaagg gngcaaaagc tgggtgctcca ccgcggtgcg accgctctag 60  
anctagtggc tcccccgggc tgcaggattt cggcacganc ncgtgcagat tcgagcanag 120  
gagcgnagg gaacgtcatc gtttggaag cntcgcaata agacgcacac gttgtgccgc 180  
cgctntggct ctaaggccta ccaccttcag angtcgacct gtggcaaatt tggctaccct 240  
gccaagcgca agagaaagtn taactggagt gccaaaggcta aaagacgaaa taccaccgga 300  
actggtcgan tgaggcacct aaaatttgta taccgcagat tcaggcatgg tttccntgaa 360  
ggaacaacac ctaaacccaa gagggcagct gttgcagcat ccagttcatc ttaagattgt 420  
caacgattag tcatgcaata a 441

<210> 734  
<211> 379  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (42)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (323)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (324)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (342)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (346)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (375)

<223> n equals a,t,g, or c

<400> 734

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ggccgcagaa gcgagatgac gaagggaacg tcatcgtttg gnaagcgctg caataagacg 60
cacacgttgt gccgccgctg tggtcttaag gcctaccacc ttcagaagtc gacctgtggc 120
aaatgtggct accctgcca ggcgaagaga aagtataact ggagtgccaa ggctaaaaga 180
cgaaatacca ccggaactgg tcgaatgagg cacctaaaaa ttgtataccg cagattcagg 240
catggattcc gtgaaggaa aacaccta aa cccaagaggg cagctgttgc agcattccag 300
ttcatcttta agaattgtcaa cgnntttagt catgcaataa antgtnctgg ggttttaaaa 360
aattaaaaga aaagnaanaa 379
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<210> 735

<211> 187

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (172)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (176)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (177)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (179)

<223> n equals a,t,g, or c



674

<220>  
<221> misc feature  
<222> (185)  
<223> n equals a,t,g, or c

<400> 735  
gcgggacgtcgt cggtaaatac gggacccgct atgggggcctc cctccggaaa atgggtgaaga 60  
aaattgaaat cagccagcac gccaaagtaca cttgctcttt ctgtggcaaa accaagatga 120  
agagacgagc tgtggggatc tggcactgtg gttcctgcat gaagacagtg gntggngng 180  
cctgnac 187

<210> 736  
<211> 576  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (94)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (334)  
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<223> n equals a,t,g, or c

<220>  
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<220>  
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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
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<220>  
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<222> (479)  
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<220>  
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<222> (519)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (553)  
<223> n equals a,t,g, or c

<400> 736

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676

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tcgacccaag cgctccgcca cgctccggcc tcagccctac cagcactggt catgtctaaa 60
ggtcatcgta ttgaggaagt tcctgaactt cttntggtag ttgaagataa agttgaaggc 120
tacaagaaga ccaaggaagc tgttttgctc ctttaagaaac ttaaagcctg ggaatgatat 180
caaaaaggctc tatgcctctc agcgaatgag agctgggcaa aggcaaaatg gagaaaccgt 240
cgccgtatcc agcgcagggc ccgtgcatca tctataatga ggataatggt atcatcaagg 300
ccttcagaa acatccctgg aattactctg cttnaatgtn aagcaagctg aaacattttg 360
naagcttgct ncctggtggg gcatgtgggg acgtttncgg cattgggang gaaatggcctt 420
ttccgggant ttaganggan tgtnacgggc antgggcgta aagcgnnttc cctccaagng 480
ttaactacan tcttcccagg caccaagatg gattaatana gatcttggca gaatctggaa 540
aagcccagag gtnccaaggg cccttcgggc accagc 576

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&lt;210&gt; 737

&lt;211&gt; 297

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (7)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (243)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (254)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (261)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (266)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (275)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 737

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gctccgncat ggcgtgtgct cgccactga tatcgggtga ctccgaaaag ggggagtcac 60
ctggcaaaaa tgtcactttg cctgctgtat tcaaggctcc tattcgacca gatattgtga 120
actttgttca caccaacttg cgcaaaaaca acagacagcc ctatgctgtc agtgaattag 180
caggtcacat gactagtgtc gagtcttggg gtactggcag agctgtggct cgaattccca 240

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ganttcgagg tggngggact naccgntctg gccanggtgc ttttgaaac atgtgtc 297

<210> 738

<211> 354

<212> DNA

<213> Homo sapiens

<220>

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<222> (26)

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<221> misc feature

<222> (74)

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<220>

<221> misc feature

<222> (80)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (84)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (98)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (120)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (148)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (193)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (286)

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<220>  
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 <222> (303)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (329)  
 <223> n equals a,t,g, or c

<220>  
 <221> misc feature  
 <222> (351)  
 <223> n equals a,t,g, or c

<220>  
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 <222> (353)  
 <223> n equals a,t,g, or c

<400> 738  
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 actctgaagg gacncacagn tatngtgaag ggcccccanaag gaaccctgcg gagggacttn 120  
 aatcacatca atgtataact cagccttntt ggaaagaaaa aaaagaggct ccgggttgac 180  
 aaatgggtggg gtnacagaaa ggaactggct accgttcgga ctattttag tagatgtacag 240  
 aacatgatca aggggtgttac actgggcttc cgttacaaga tgaggnetgt gtatgtcac 300  
 ttncatcatca acgttggttat ccaagagant ggggtctattg ttgaaatcca nant 354

<210> 739  
 <211> 504  
 <212> DNA  
 <213> Homo sapiens

<400> 739  
 ccgccatcat ggggtcgcatg catgtctccg ggaagggcct gtcccagtcg gctttaccct 60  
 atcgacgcag cgtccccact tgggtgaagt tgacatctga cgacgtgaag gacagattt 120  
 acaaactggc caagaagggc ctactcctt cacagatcgg tgtaatcctg agagattcac 180  
 atgggtgttg acaagtacgt tttgtgacag gcaataaaat tttaagaatt ctaaagtcta 240  
 agggacttgc tcctgatctt cctgaagatc tctaccattt aattaagaaa gcagttgctg 300  
 ttcgaaagca tcttgagagg aacagaaagg ataaggatgc taaattccgt ctgattctaa 360  
 tagagagccg gattcaccgt ttggctcgat attataagac caagcgagtc ctccctccca 420  
 attggaaata tgaatcatct acagcctctg ccttggtcgc ataaatttgt ctgtgtactc 480  
 aagcaataaa atgattgttt aact 504

<210> 740  
 <211> 399  
 <212> DNA  
 <213> Homo sapiens

<400> 740

679

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ggacccgcca acatgggccg cgttcgcacc aaaaccgtga agaaggcggc ccgggtcatc 60
atagaaaagt actacacgcg cctgggcaac gacttccaca cgaacaagcg cgtgtgcgag 120
gagatcgcca ttatccccag caaaaagctc cgcaacaaga tagcaggtta cgtcacgcat 180
ctgatgaagc gaattcagag aggcccagta agaggatatct ccatcaagct gcaggaggag 240
gagagagaaa ggagagacaa ttatgttcct gaggtctcag ccttgatca ggagattatt 300
gaagtagatc ctgacactaa ggaaatgctg aagcttttgg acttcggcag tctgtccaac 360
cttcagtcac tcagcctaca gttgggatga tttcaaaac 399
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&lt;210&gt; 741

&lt;211&gt; 431

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (335)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (393)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (417)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (425)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 741

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aaacaacggt cgtgccaaaa agggccgcgg ccatgtgcag cccattcgct gcacgaactg 60
cgcccgggtgc gtgcccaagg ataaggccat caagaagttt gtcattcgga acattgtaga 120
agccgctgct gtcagggaca tatctgaagc aagcgtcttc gacgcctacg tgcttcccaa 180
gctctatgtc aagctgcatt attgcgtgac tgtgccatcc atagcaaggt tgttagggaat 240
cgatcccgtc aagcccggaa ggaccgaaca cccccaccac gattcagacc tgctggcgct 300
gcaccttcga cctccaccaa agcccatgta aagangccgt ttttgtaagg acggaaggaa 360
aattaccttg gaaaaataaa atggaagttg tantttttaa aaaaaaaaaa aaaccnagg 420
ggggncccgt c 431
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&lt;210&gt; 742

&lt;211&gt; 357

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (178)

680

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (240)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (273)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (297)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (324)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (352)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (353)

<223> n equals a,t,g, or c

<400> 742

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gtgcagcggg tcattaaaat cgatggcaag gtccgaactg atataaccta ccctgctgga 60
ttcatggatg tcatcagcat tgacaagacg ggagagaatt tccgtctgat ctatgacacc 120
aagggtcgtt ttgctgtaca tcgtattaca cctgaggagg ccaagtacaa gttgtgcnaa 180
gtgagaaaga tctttgtggg cacaaaagga atccctcatc tgggtgactca tgatgcccgn 240
accatccgct accccgatcc cctcatcaag gtnaatgatc cattcatatt gatttanaga 300
ctggcaagat tactgatttc atcnatttcg aactggtaa cctgtgtatg gnnactg 357
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<210> 743

<211> 249

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (42)

<223> n equals a,t,g, or c

<220>

681

<221> misc feature  
<222> (77)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (115)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (122)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (158)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (200)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (215)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (221)  
<223> n equals a,t,g, or c

<220>  
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taactccatg atgatgnacg ggcgcaacaa cggcaagaag ctcatgactg tgcgnatcgt 120  
cnagcatgcc ttcgagatca tacgcctgct cacaggcnaa gaaccctctg caggtcctgg 180  
tgaacgccat catcaacatn ggtccccggg aagantccac ncgcattggg cgcgccggga 240  
ctgttgana 249

<210> 744  
<211> 383  
<212> DNA  
<213> Homo sapiens



<400> 744  
gaagaattgc atcgtgctca tcgacagcac accgtaccga cagtgggtacg agtcccacta 60  
tgcgctgccc ctgggccgca agaaggagc caagctgact cctgaggaag aagagatttt 120  
aaacaaaaaa cgatctaaaa aaattcagaa gaaatatgat gaaaggaaaa agaatgccaa 180  
aatcagcagt ctcttgagg agcagttcca gcagggaag cttcttgctg gcatcgcttc 240  
aaggccggga cagtgtggcc gagcagatgg ctatgtgcta gagggcaaag agttggagtt 300  
ctatcttagg aaaatcaagg cccgcaaagg caaataaatc cttgttttgt cttcacccat 360  
gtaataaagg tgttttattgg ttt 383

<210> 745

<211> 452

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (314)

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<220>

<221> misc feature

<222> (328)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (334)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (352)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (403)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (416)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (429)

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<220>

<221> misc feature

<222> (435)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (451)

<223> n equals a,t,g, or c

<400> 745

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ggcagccttc ctcaaaaagt ccgggaagct gaaagtcccc gaatgggtgg ataccgtcaa 120
gctggccaag cacaaagagc ttgctcccta cgatgagaac tggttctaca cgcgagctgc 180
ttccacagcg cggcacctgt acctccgggg tggcgctggg gttggctcca tgaccaagat 240
ctatggggga cgtcagagaa acggcgctcat gccagccac ttcagccgag gctccaagag 300
tgtggcccgc cgntcctcc aagccctngg agngctgaa aatgggtggaa anggaccaag 360
atggcggccc gcaaactgac acctcagggg caaagagatc tgnacagaat cgccgnacag 420
gtggcagcnt gccancaaag aagcattaga nc 452
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<210> 746

<211> 114

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (11)

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<220>

<221> misc feature

<222> (22)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (55)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (85)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (98)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (103)

<223> n equals a,t,g, or c

<400> 746

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ctgtctgcaa accaatgtgc cgtgncagcc aaggacangg tgnactgtgg ctac 114

<210> 747

<211> 165

<212> DNA

<213> Homo sapiens

<400> 747

ggcacagcca cccagggcct gagtcctgtc cacaccccag gtgacggccg gctccacaag 60  
gcagtgagcg tgggcccccg ggtgcacatc attgaggagc tgcagatctt ctcatcggga 120  
cagcccgtgg cagaatctgc tcctgggaca cccacagggg ggctg 165

<210> 748

<211> 583

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (46)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (291)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (341)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (387)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (458)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (462)

<223> n equals a,t,g, or c

685

<220>  
<221> misc feature  
<222> (480)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (537)  
<223> n equals a,t,g, or c

<220>  
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<222> (541)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (543)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (546)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (580)  
<223> n equals a,t,g, or c

<400> 748  
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aagagcactg gactccggaa ggacacagca ttgttggttt tgccatgtac tattttacct 120  
atgacccttg gattggcaag ttattgtatc ttgaggactt cttcgtgatg agtgattata 180  
gaggcttttg cataggatca gaaattctga agaacttaag ccagggttga atgagggtgc 240  
gctgcagcag catgcacttt ttggttagca gaatggaatg aaccattcat naacttctat 300  
aaaagaagag gtgcttctga tctgtccagt gaagaagggt ngagacttgt taagaatcga 360  
caaggagtct tgctaaaaat ggcaacntag gagtggaggaa tgcttgctgt agatgacaac 420  
ctccattcta ttttagaata aaattcccca actttctntt gnttttctat gctggttggn 480  
agtgaatta atttaaatga gcaccattt caaaagcttt aattaccaag tgggcnnttg 540  
ntncntgtt ttgaaaattg aaggctttgt tttaaaaggn ggc 583

<210> 749  
<211> 419  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (3)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (16)  
<223> n equals a,t,g, or c

<220>  
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<222> (24)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (169)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (342)  
<223> n equals a,t,g, or c

<220>  
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<222> (351)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (376)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (398)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (419)  
<223> n equals a,t,g, or c

687

&lt;400&gt; 749

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acnccgaggc ttcttnatta cggncggggn tgatgagga aagctggtga cgcctgcagg 60
tgaccgggtcc ggaattcccg ggtcgacca cgcgtccggg cgtgatgtct cacagaaagt 120
tctccgctcc cagacatggg tccctcggct tcctgcctcg gaagcgana gcaggcatcg 180
tggaaggtg aagagcttcc ctaaggatga cccgtccaag ccggtccacc tcacagcctt 240
cctgggatac aaggctggca tgactcacat cgtgcgggaa gtcgacaggc cgggatccaa 300
ggtgaacaag aaggagggtg gtggaggctg tgaccattgt anagacacca nccatggtg 360
tttgtgggca ttgttngcta cgttggaaa ccctcggang ctccggaact tcaagaatn 419

```

&lt;210&gt; 750

&lt;211&gt; 507

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (453)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (475)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (497)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (499)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (503)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 750

```

ggccgaacat ggagatcaag attatatctg gcaactgcatt gatctcttct tagatttcat 60
tactgtcttc agaaaactca tgatgacct ggccatgaat gaaaaggata agaagaaaga 120
gaagaaatga agtgaccatc cagcctttcc caattagact tcctctcctt ccaccctca 180
tttccctttt gcacacatta cagggtggtg gttctgtgat aatgaaaagc atcagaaaag 240
cttttgtact ttgtggttcc ctctattttg aattttttga tcaaaaaact gattagcaga 300
atatagtttg gagtttggtc tcacttccct ggggttcccc tcaactccctt ttttggcaac 360
cccatctgta gcctcttccct ctactcaggc agtcgaccgg ccacgatgag aagtgggacc 420
agcagagggc gccaacttca ggagcccgct ttncaccca gcttcattca cccantggac 480
ctgaactgtt tgggtananc ccnccgg 507

```

&lt;210&gt; 751

<211> 435  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (1)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (11)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (23)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (31)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (34)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (110)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (134)  
<223> n equals a,t,g, or c

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<220>  
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<220>  
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<223> n equals a,t,g, or c

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<220>  
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<222> (331)

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690

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<220>

<221> misc feature

<222> (355)

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<220>

<221> misc feature

<222> (363)

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<220>

<221> misc feature

<222> (365)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (403)

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<220>

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<222> (420)

<223> n equals a,t,g, or c

<400> 751

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ggatcccccg ggctgcaggt agcctgagct tagctcagcg ccggggcttn accaagacct 120
acactgttgg ctgngaggaa tgcacagtgg ntccctgntt atccatcccc tgcaaactgc 180
agagtggcac tcattgctng tggacggacc agctnctnca aggctntgaa aagggttnc 240
agncccgtca ccttgcntgc ctgcctcggg agccagggct gggcacctgg cagtncctgc 300
ggtcccagat agcctgaata ntgnccggag nggaagctga agcctgcaca gtgtncaccc 360
tgntnccact cccatctttc tttcggacaa tgaaataaag agntaccacc cagcaaaaan 420
aaaaaaaaaa acctg 435
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<210> 752

<211> 591

<212> DNA

<213> Homo sapiens

<220>

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<222> (195)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (240)

<223> n equals a,t,g, or c

<220>  
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<222> (319)  
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<220>  
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<222> (345)  
<223> n equals a,t,g, or c

<220>  
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<220>  
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<223> n equals a,t,g, or c

<220>  
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<222> (452)  
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<220>  
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<222> (570)  
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<220>  
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<222> (572)  
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<220>  
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<222> (579)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (586)  
<223> n equals a,t,g, or c

<400> 752  
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gcttctggca tcctgttggt gctgtggctg atagcccccgcagggcctg cacctgtgtc 120  
ccaccccacc cacagacggc cttctgcaat tccgacctcg tcatcagggc caagttcgtg 180  
gggacaccag aagtnaacca gaccaccta taccagcgtt atgagatcaa gatgaccaan 240  
atgtataaag ggttccaagc cttaggggat gccgctgaca tccggttcgt ctacaccccc 300  
gccatggaga gtgtctgcng atactttcac aggtcccaca accgnagcga ggagtttctc 360  
attgntggaa aactgcagga tggacttttg cacatcacta cctgcanttt tgtggctccc 420  
tggaacagcc tgagcttagc tcagcgccgg gncctnacca agacctacac tgttggtcgn 480  
gaggaaatgc acaagtgcct ccctgtttat ccatccccctg caaactgcag agtgggcact 540  
cattgcttgt aggaacngacc agctcctacn angtccttna aaaggncttt c 591

<210> 753  
<211> 547  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (429)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (454)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (489)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (503)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (512)  
<223> n equals a,t,g, or c

693

&lt;400&gt; 753

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aagcacttgt ccagatgagc agtgtgtgaa ttctcctgga tcttaccagt gcgttccctg 60
cacagaagga ttccgaggct ggaatggaca gtgccttgat gtggacgagt gcctggaacc 120
aaacgtctgc gcaaatggtg attgttccaa ccttgaaggc tcctacatgt gttcatgcc 180
caaaggctat acccggactc cggaccacaa gcaactgtaga gatattgatg aatgtcagca 240
agggaatcta tgtgtaaacg ggcagtgcaa aaataccgag ggctccttca ggtgcaactgt 300
ggacaggggt taccagctgt cggcagctaa agaccagttt gaagacattg atgaatgcca 360
caccgtcatc tctgttgctc atgggcatgc aagaacactg aagctctttt ccatgtgttt 420
tttgaccang gttacagaac atctgggctt gganacactg tgaaaaattt caatgaatgc 480
ttggaagana aaatttttgc canaaaagaa antgctttat actgcagggt cctatgatgt 540
cttgtcc

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547

&lt;210&gt; 754

&lt;211&gt; 384

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (307)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (374)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 754

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gtcgcgctcc agcgccatgg cgccctccag gaagttcttc gttgggggaa actggaagat 60
gaacgggagg aagcagagtc tgggggagct catcggcact ctgaacgcgg ccaaggtgcc 120
ggccgacacc gaggtggttt gtgctcccc tactgcctat atcgacttcg cccggcagaa 180
gctagatccc aagattgctg tggctgcgca gaactgctac aaagtgacta atggggcttt 240
tactggggag atcagccctg gcatgatcaa agactgcgga ccacgtgggt ggtcctgggg 300
cactcanaga gaagcatgtc tttggggaat cagatgagct gattgggcag aaagtggccc 360
atgctctggc aganggactc ggat

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384

&lt;210&gt; 755

&lt;211&gt; 253

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (60)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (217)

&lt;223&gt; n equals a,t,g, or c

<220>  
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<222> (240)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (244)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (252)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (253)  
<223> n equals a,t,g, or c

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cagtgcgaagc agccctgccca gccacctcct gtgtgccccca cgccaaagtg cccaagagcc 120  
atgtccacccc ccgaagtgcc ctgagcctta cctgcctcct ccttgtccac ctgagcattg 180  
cccacctcca ccttgccagt ataaatgccc tcctgtngca accataccac cctggcagcn 240  
gaanttcccc cnn 253

<210> 756  
<211> 183  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (5)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (9)  
<223> n equals a,t,g, or c

<220>  
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<222> (48)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (79)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (83)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (108)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (141)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (144)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (146)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (148)

<223> n equals a,t,g, or c

<400> 756

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ctaccttctg ccctgtgtnt ggnacctaca tccttaatga ttgtcctntt acccattctg 120  
gaattttttt ttttttaaaa naantncnga aagcattttg aaaaaaaaaa aacaaaaaaaa 180  
aag 183

<210> 757

<211> 99

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (12)

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<220>

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<222> (26)

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<220>

<221> misc feature

<222> (33)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (45)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (77)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (79)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (82)

<223> n equals a,t,g, or c

<400> 757

agcctttaat anatcatata ggaaantggt agntgcagta cggtnngaatt tccgggtgac 60  
tcagcgtccg ggattgnanc anctgggatt ggagtttgg 99

<210> 758

<211> 60

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (36)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (38)

<223> n equals a,t,g, or c

697

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<222> (40)  
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<220>  
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<222> (45)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<400> 758  
ggcacgaggt tttttttttt tttttttttt ttttntntn ttttntttt ttataaaaaa 60

<210> 759  
<211> 66  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (6)  
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<220>  
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<222> (59)  
<223> n equals a,t,g, or c

<220>  
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<222> (63)  
<223> n equals a,t,g, or c

<220>  
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<222> (65)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (66)  
<223> n equals a,t,g, or c

<400> 759  
agaganaacc gagttttttt tttttttttt tttttttttt tttttttttt ttttttttnc 60  
ccntnn 66



<210> 760  
<211> 487  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (409)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (433)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (473)  
<223> n equals a,t,g, or c

<220>  
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<222> (475)  
<223> n equals a,t,g, or c

<220>  
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<222> (477)  
<223> n equals a,t,g, or c

<400> 760  
tacagatgga gcaaatgtcc taacagagaa atagaggtga tgctgctaaa gggagaaatg 60  
ccaggcggac aaagttcagt gtcgggaatt ttccccgtga cattcactgg ggcattgagat 120  
tttgaagaa gttttttact ttggttttagt ctttttttcc ttccctttta ttcagctaga 180  
atttctggtg ggttgatggt agggataaat gtgtctgtgt tgcttcaa at tggtctgaaa 240  
ggctatcctg ctgaaagtcc tgctttccta tctagcattt atttctctgg caaacttttc 300  
tttcttttct tttttaaagt aaacttgtgt attgagctta actgtatttc agtatttcca 360  
gcttatgtgt acattattcc aatgataccc aacagttatt tatattttnt aacaaattca 420  
cagtctgaat gangacttta tttcatggat tataataagg aatgaggtaa ttngngnctc 480  
acattca 487

<210> 761  
<211> 422  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (253)  
<223> n equals a,t,g, or c

699

<220>  
<221> misc feature  
<222> (297)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (350)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (353)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (382)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (403)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (406)  
<223> n equals a,t,g, or c

<400> 761  
gaaaaggcta aaatcatgaa ttagttacaa gcaacagtac caacttatgt gacccctgag 60  
gggtggggct gtgagctctt aatttgttt tgattctgaa aaactctgct tcctggcatc 120  
caggagttag agattgagcc ttcatcttc ttctcaaaa ctagtttttg atgctttctt 180  
tcatgggaat agtcactttt ttatttagta aatcgcatg ctggaaccac caaggatgtg 240  
gaatgtcctt gantgtatta ttatgcaag tcacagtcac gtttgccatc atggcantat 300  
ttgaaacact aataatgtgt ttttactttt ttatccccgt taaaatgatn ttnaaaagga 360  
aaaagggtggt tatagcccct anaatttctg ggtccaaatt atnccnaaaa tttcctaaaa 420  
aa 422

<210> 762  
<211> 375  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (279)  
<223> n equals a,t,g, or c

700

<220>  
<221> misc feature  
<222> (315)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (373)  
<223> n equals a,t,g, or c

<400> 762  
tttgaccact tgccaagtcc ctgtctcttt cagacacaga caagcttcat tttaaattatt 60  
tcaactgatg aagtaacaat aaagttataa atgataatga tcagatgaaa taattttataa 120  
ctttattgtt acttcacag tgtttccttt tgaaagggtg atgaattcat tacattttta 180  
ttctaagtta ttatctgtag attagaagat aaaatcaagc atgtatctgc ctatactttg 240  
tgagttcacc tgtctttata ctcaaaagtg tcccttaana gtgtccttcc ctgaaataaa 300  
tacctaaggg agtгнаacag tctctggagg accactttga gcctttggaa gttaagggtt 360  
cctcagccac ctngt 375

<210> 763  
<211> 372  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (261)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (301)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (320)  
<223> n equals a,t,g, or c

<220>  
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<222> (338)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (344)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

701

&lt;222&gt; (354)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 763

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caatatgtag cttactcttt ttttcccccc ttcttaaacc accagtgggt catttttaag 60
atTTTTtcat caagagaaga ataactttac taaattttat ttctttattt gcaaaagaat 120
ctttattaaa acaaacaatc ttaactatgc acatgatgtg accagatcat cttgaaaata 180
ttcctcttta gtaggaactc ttgtttttta actcttggtg tggtcagaat ataatacttc 240
cataattact tataattcct ntccgggtac tgggggctat aaatacaact tttttaaatg 300
naattcatgg ttatcaaccn ggctccaagt accattangg ggtncctat gggnaattac 360
cttgggaaag tc 372
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&lt;210&gt; 764

&lt;211&gt; 195

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (46)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (52)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (60)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (67)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (71)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (86)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (94)

&lt;223&gt; n equals a,t,g, or c

702

<220>  
<221> misc feature  
<222> (128)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (146)  
<223> n equals a,t,g, or c

<220>  
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<222> (151)  
<223> n equals a,t,g, or c

<220>  
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<222> (153)  
<223> n equals a,t,g, or c

<220>  
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<222> (183)  
<223> n equals a,t,g, or c

<400> 764  
cggacgcgtg ggcggacgcg tggggaaagg taagctctag cttaangtct angatttgtn 60  
ctttganatt naggaaggta aggatnggtc agangatgta acttgatgtg agcagtaata 120  
aacctgtntt aaatatcata ctgtgnatat ntnattgaaa atttatttca gagcggaaaa 180  
acnttagcta aaatc 195

<210> 765  
<211> 103  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (76)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (83)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (91)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (94)  
<223> n equals a,t,g, or c

<400> 765  
attaataatg gataccattc taaacaagtn aatccaagtt aagcccgtta aggagaaaga 60  
aattaagggtt agcggntcat gtncaagctg ngtntgaaag tgg 103

<210> 766  
<211> 538  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (285)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
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<223> n equals a,t,g, or c

<220>  
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<222> (327)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (379)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (436)  
<223> n equals a,t,g, or c

<220>  
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<222> (441)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (445)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (450)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (474)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (504)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (516)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (520)  
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<220>  
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<222> (522)  
<223> n equals a,t,g, or c

<220>  
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<222> (526)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (534)  
<223> n equals a,t,g, or c

<400> 766  
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ggcttcatcc tcaccgagcg cctgggcagc ggcacgtacg ccacggtgta caaggcctac 120  
gccaaagaag acactcgtga agtggtagcc ataaagtgtg tagccaagaa aagtctgaac 180  
aaggcatcgg tggagaacct cctcacggag attgagatcc tcaaggcatt cgacatcccc 240  
acattgtgca gctgaaagac tttcagtgtg agctgggggc ggggncgctg ccaaaggag 300  
tggagaagga catctntttc aggccgnctc tctgcctctt aaaacaacag ttgggaacag 360

705

ttgaaccaat taatcttanc ttcaatccat tgggaagttt ttttgccggc caaggggggg 420  
gccggaaacc ttggtncctc nggcntttcn aatcccaatt aaaccccggc caanggaatt 480  
ttcttgcccc cttgaaagaa aaanggttg ggcccnccn tnggtncctt tccnaatg 538

&lt;210&gt; 767

&lt;211&gt; 415

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (350)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 767

ctttcccaag ggaaacactc agctttctat agaaaattgc actttttgtc gagtaatcct 60  
ctgcagtgat acttctggta gatgtcacc c agtgggtttt gttaggtcaa atgttcctgt 120  
atagtttttg caaatagagc tgtatactgt ttaaatgtag caggtgaact gaactgggg 180  
ttgctcacct gcacagtaaa ggcaaaactc aacagcaaaa ctgcaaaaag gtgggttttg 240  
cagtaggaga aaggaggatg tttatttgca gggcgccaag caaggagaat tgggcagctc 300  
atgcttgaga cccaatctcc atgatgacct acaagctaga gtattttaan gcagtggtaa 360  
atttccagga aagccagaag ttaaaggcca aaattgtaaa tcagtcgaga tcggg 415

&lt;210&gt; 768

&lt;211&gt; 425

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (351)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (381)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (389)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (422)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (423)



<223> n equals a,t,g, or c

<400> 768

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ctttgtacag gggctcagtt caggaagag ttgagcttct ctctgagggg tccctagggg 60
gaccctcag gccaggccct gatccagttc tccagggctt ttctcagggg cagggtccatg 120
gggagaccat ggggtgcttg tctgacactg acctcgccct gctgagtccc cccatcagac 180
tgtccttct ctgcagcgag tgtctgcagg gtctggatcc aggaaaggaa ttctgatctg 240
tggaagtgtg tctccccgt gtgtgtcctg cactaaatgt ccaaaccctg atacaggatg 300
taatgcagag agggccacag gcacaacca ggcctgacaa tcccgtatgt nggaagtaga 360
actgaccccc aacaccaga ngtcatgtng aaatactcac ggtatacatg gaaaaaaaaa 420
annaa 425
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<210> 769

<211> 256

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (34)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (60)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (83)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (85)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (112)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (120)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (151)

<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (200)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (211)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (235)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (250)  
<223> n equals a,t,g, or c

<400> 769  
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gcaccagctg gcctcccaaa ggngnggcag ccgtgcttat atttttatgg tnacaatggn 120  
cacaaaatta ttatcaacct aactaaaaca ntccttttct ctnttttcct ggaattatca 180  
tggagttttc taattctctn ttttggaat ngtagattgt ttttgaaatg ctttnacgat 240  
gttaaaatan tttatt 256

<210> 770  
<211> 316  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (3)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (158)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (173)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (200)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (228)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (266)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (267)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (281)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (284)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (291)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (294)

<223> n equals a,t,g, or c

<400> 770

ggnagaggtt caacgatgtg gtgtggcatg taagctggtc catcanagcc aacatcctgg 60  
ctgtctctgg tggagacaat aaggaggagt tacagatgca gccacagatt gatcatctgc 120  
ctttaacgtg aatcggagat gctttgtaat ctactgtnc agctgaagca ctncatgtta 180

709

cgaggaagaa actacaagtn atgttcaaact ctattttggg tcatttttnat gtacctttgg 240  
gttcaggcat tatttggggg gttttnttcc caaaggaact naantaaagt natnttgctt 300  
attaaaaaaaa ggaaaaa 316

<210> 771  
<211> 68  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (8)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (14)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (22)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (32)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (36)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (55)  
<223> n equals a,t,g, or c

<400> 771  
caaaagcngg agcncaccg cnggcgaccg cncctanaact agtggatccc ccggnctgca 60  
ggaattca 68

<210> 772  
<211> 258  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (17)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (19)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (42)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (45)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (47)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (60)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (61)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (139)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (155)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (189)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (225)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (235)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (250)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (257)  
<223> n equals a,t,g, or c

<400> 772  
cggacggtgg gttttntnt tttttttttt tttttttttt tnttntnttt tttttttatn 60  
nttgggtcat ttccacatgc ttattccag caatcaaaat aattaaaaac atctcaaatt 120  
attatacaca tacaaaatng gtacagagtc ttttnccttc tcccaccctt agggggaaaa 180  
actgctttnt gctttgggaa gttgtctctg aaaccggggg acagnggacg caggncagac 240  
taggagggan ccgggang 258

<210> 773  
<211> 587  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (535)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (559)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (565)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (570)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (572)

<223> n equals a,t,g, or c

<400> 773

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ggatcccaac tgctcctgcg ccgccggtaa gaggctgggg atgcccagtg tagactgtag 60
cgctagagaa gcaatttctg acccctcttt ctttctctgg tcaactcaatt tcaggacagg 120
agttgctcct tcccaaagag ttttggggta tctttctctc cattctaggt tattcgagc 180
ccccttttta ccgttaagga gatctgagtt aatggcttgc tcaagttccc aggaatcggg 240
tgtggactga ggaactcggc ccggggctct tagtacgccg tcccttggtc aggtatccag 300
ggacggttct cacctctgtc ttttctcctt gcaggtgact cctgcacctg cgccggctcc 360
tgcaaagtca aagagtgcaa atgcacctcc tgcaagaaaa gtaagtggga tcctctcttt 420
cctctacccc ttctgtctc ccagcctgtc ccctcttcac catcctcagg ggaattaaag 480
caagtctggg gatgccccat tgcgccggga aattggtggc ctcctcagtg atccntatca 540
aggagaagca aggaatccnt aattnccggn gnccgttgta cttaact 587
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<210> 774

<211> 89

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (74)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (76)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (77)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (79)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (83)

<223> n equals a,t,g, or c

<220>

<221> misc feature

713

&lt;222&gt; (86)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 774

ggcagagggga aacatcaggn atgctaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60  
aaaaaaaaaa aanannana aanaantat 89

&lt;210&gt; 775

&lt;211&gt; 113

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (10)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (30)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (32)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (57)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (59)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (75)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (77)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (106)

&lt;223&gt; n equals a,t,g, or c



<400> 775  
gggtccggcgn ggtggagggga aacgcctccn tntctatata aggaatttcc cggtgtntnc 60  
gggtccctttt cctntnttc agagtggggg gcccaaattt gggcgntctg ttt 113

<210> 776  
<211> 66  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (5)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (13)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (49)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (65)  
<223> n equals a,t,g, or c

<400> 776  
ggcanaggat ttnaacctc accttcgtgt ttcccccaat gtttaaaang ttggatggt 60  
ttgtng 66

<210> 777  
<211> 441  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (401)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (436)  
<223> n equals a,t,g, or c

<400> 777  
atttgtatga aagaacttaa gcaaccttaa tattggctga gactttttaa agagaaggag 60

715

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aatttacttt tttgcctaatt taggaggaag cttgggcata aggaaaaaga gctgtgttta 120
ggaaatagtg tgtgcccttt gaattaatgg agtgacaccg tgattcatga caggattcca 180
tttactggct gtatgccagc tgctgacagt ctataagtct taatagagat ggagtagagg 240
agctgaagggt tggcatctgc tcattgatga caactatggt tacaatatgt tgtggactag 300
ttggggcact gaggcaggag aatcacgtgg agcccacggg ttcaagacca gcctgggaaa 360
catagcaaga ccttgtttct aaaaaaaaaa aaaaaaaaaac ncgagggggg gcccggtacc 420
caattcgccc taaagngagt c 441
```

&lt;210&gt; 778

&lt;211&gt; 483

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (335)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (356)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (471)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (472)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (478)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (481)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (482)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 778

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gcttactttt aaccagtgaatttgacctgc ccgtgaagag gcgggcataa cacagcaaga 60
cgagaagacc ctatggagct ttaattttatt aatgcaaaca gtacctaaaca aaccacagg 120
```

716

```

tcctaaacta ccaaacctgc attaaaaatt tcggttgggg cgacctcgga gcagaaccca 180
acctccgagc agtacatgct aagacttcac cagtcaaagc gaactactat actcaattga 240
tccaataact tgaccaacgg aacaagtta cctagggata acagcgcaat cctattctag 300
agtccatata aacaataggg ttacgacct cgatnttggg tcaggacatc ccgatngtgc 360
agccgctatt aaagggttcgt ttgttcaacg attaaagtcc tacgtgatct gagttcagac 420
cggagtaatc caggtcggtt tctatctact tcaaattcct ccctggaaaa nnagaagngg 480
nng

```

&lt;210&gt; 779

&lt;211&gt; 389

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (261)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (325)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (337)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (362)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (367)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (389)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 779

```

ccctcttccc ggetccagct ccgcccgcag ctccagcctt tgetccccct cccaaagtcc 60
cctccccgga ggggagcgca cctagggtec ctcttcgctc cccccagccc agctaccgct 120
tcagaccagc agcctcgggg ggcaccccc cgccagcctg cctccctccc gtcagccct 180
gccagggttc ccagccatg aatctcttcc gattcctggg aaaactctcc caactcctcg 240
ccatcatctt gctactgctc naaatctgga attcccgtc gtgcgccgaa attcaggaaa 300
aaaacagtcc cgtttggtgt ggggntttca atggccnaat ttgaaatcct ttcacaataa 360
tntttantct aaaaattttt ttaaagggn

```

389

<210> 780  
<211> 66  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (18)  
<223> n equals a,t,g, or c

<400> 780  
ttgtttttaaa aactatgnac caggtttcta atgatgaaat aaagcacctg tttgttttat 60  
accaaaa 66

<210> 781  
<211> 255  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (83)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (94)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (133)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (150)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (163)  
<223> n equals a,t,g, or c

<220>

718

<221> misc feature  
<222> (172)  
<223> n equals a,t,g, or c

<220>  
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<222> (179)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (182)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (184)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (209)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (224)  
<223> n equals a,t,g, or c

<400> 781  
ggcagagcag agcagacgca caggccggaa aaggcgcac taacgngtat ctaggctttg 60  
gtaactgctg acaagttgct ttnacctgaa tttnatgata catttcatta aggttccagt 120  
tataaaatat ttngttaaat atttattaa gtggactata gantgcaaac tnccatttnc 180  
cngntaaact tgtttttaa ttatggcct aggtaacca tatngtaggg tattaatttc 240  
cttgaacca aacca 255

<210> 782  
<211> 348  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (3)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (28)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (32)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (75)  
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<220>  
<221> misc feature  
<222> (123)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (135)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (178)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (182)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (296)  
<223> n equals a,t,g, or c

<220>  
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<222> (298)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (307)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (323)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (324)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (345)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (346)  
<223> n equals a,t,g, or c

<400> 782  
ttnagtagag acagggtttc accatgtnag tnaggctggt ctggaactcc tgacctcagg 60  
tgaatccacc cgagnttggt ctccaagtgt gctgggcatt ataggcgtga gcactcacgt 120  
ccnccgctca aaatngcata ttcaaagaag caatttcagt tcctttctaa gctttgttag 180  
tnaaggggct cactgactt cctaggccct gtaaatttaa accagtcttt aaggttttgc 240  
caggaaagtt cccttctttc caagtgggtt tttccaaatg ggcacaatgg caagcnanac 300  
agaggangaa acattaaaaa aannaaaaaa aatttggggg ggggnncc 348

<210> 783  
<211> 160  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (29)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (47)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (49)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (78)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (82)  
<223> n equals a,t,g, or c

721

<220>  
<221> misc feature  
<222> (131)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (141)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (142)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (144)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (146)  
<223> n equals a,t,g, or c

<400> 783  
ggcacgagct acaatggcac tgtggactna tgtttccttc gccgagngnc tggagcgggg 60  
atctgatgaa aaggctcanac tnaaacgcct tgcacggcct ctcggcttga tcacagctcc 120  
ctaggtaggt naccacagag nngncncttc tagtgagcct 160

<210> 784  
<211> 81  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (25)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (77)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (78)  
<223> n equals a,t,g, or c



<220>  
<221> misc feature  
<222> (79)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (81)  
<223> n equals a,t,g, or c

<400> 784  
ggcagagcc gggatcgtgc cattncattc cagtctgggt gacagagcta gactccatct 60  
caaaaaaaaa aaaaaannng n 81

<210> 785  
<211> 541  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (175)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (265)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (354)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (355)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (356)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (361)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (364)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (369)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (393)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (399)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (405)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (411)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (463)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (489)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (521)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (530)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (539)

<223> n equals a,t,g, or c

<400> 785

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gagctgcagg catcagagaa ccagccctgc tcacgccatg cccgcccccg ccttcctct 60
tccctcttcc ctctccctgc ccagccctcc ctctcttctt ctgccggcaa ggcagggacc 120
cacagtggct gcctgcctcc gggagggaag gagagggagg gtgggtgggt ggganggggc 180
cttctccag ggaatgtgac tctcccaggc ccagaaatag ctcttgacc caagcccaag 240
gcccagcctg ggacaaagct ccganggtcg gctggccgga gctattttta cctcccgct 300
cccctgctgg tgccccacc tggacgtctt gctgcagagt ctgacactgg attnnnaaaa 360
nctnaaaang aaccctggta cccaattctg ggncccggnc ctaanctcg ncccaacca 420
tcatctgtgg acaatggagt ctggaataaa tgctgtttgt canatcaaca aaaaaaaaaa 480
aaaagggng gccgcttttag aggattcaaa gcttaagtaa nggtgcatgn gaagttcana 540
a
```

<210> 786

<211> 433

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (230)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (350)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (400)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (402)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (405)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (422)

<223> n equals a,t,g, or c

<400> 786

```
cccacgcgtc cggctctaaca cgtgcgcgag tcgggggctc gcacgaaagc cgccgtggcg 60
```

725

```
caatgaaggt gaaggccggc gcgctcgccg gccgaggtgg gatcccagag cctctccagt 120
ccgccgaggg cgcaccaccg gcccgctctcg cccgccgcgc cggggaggtg gagcacgagc 180
gcacgtgtta ggacccgaaa gatgggtgaac tatgcctggg cagggcgaan cagaaggaaa 240
ctctggtgga ggtccgtagc ggtcctgacg tgcaaatcgg tcgtccgacc tgggtatagg 300
ggcgaaaagac taaatcgaac catcttagta agctggtttc cctccgaaan tttccctcaa 360
gataagcttg gcgctctcgc aagaccccga aggaaccccn gncanggaat ttttatccgg 420
tnaaagcgaa ttg 433
```

&lt;210&gt; 787

&lt;211&gt; 527

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (492)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 787

```
cccaggatgt gtggcgagag cctgggccag cccacagcgt tcctagtcag gcagccacac 60
cttggtcctc atcttggtcc cttccaatct gaaacctcgt gcctggctcg tctgccacct 120
acatttctct ttccagctgc tgttttgtaa aaagaaaaag aaaaaagaag cccaaactag 180
tgagagtaat atctaattat ctcatttttt gtaggtctgt gataaagaac ttagtcatcc 240
cttccacctc ctactgtgaa gaacagaccc tgggtccac actgaaatcc cctctagtca 300
ccattccca cccccaggg agctgcctcc caggcagggg gtgcagaaaa tgattgatgg 360
gctggggaac cctggagagc ctcgactccg gaagtctcaa ggtgcctcct cctctcctta 420
gctggcccgt tggttttctg agcagggggc tgaactgtga acaagtcaga caaataaagc 480
aagggtctgc ancatctgca atgtcaaaaa aaaaaaaaaa aaaaaaa 527
```

&lt;210&gt; 788

&lt;211&gt; 203

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (121)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (160)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (179)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

726

&lt;222&gt; (181)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (192)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 788

```
gcttcacgtg gtctgacaat ttatTTTTgc catcattttt ttaattaaag aaaaaatttc 60
cagaagagga aaaaaaaact acaaaaaaca aaacattgaa ggttgatatt ttatgtggaa 120
naacatttga attgaattca gaatttttct gaagggtgtan atactttttt ttttttttna 180
ncaaaaaccc tnatttcaaa agg                                     203
```

&lt;210&gt; 789

&lt;211&gt; 124

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (38)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (70)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (87)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (94)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (113)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 789

```
ggcacgagca gcctacagcc gcctgcatct gtatccancg ccagggtcccg ccagtcccag 60
ctgcgcgcgn cccccagtcc cgcaccngtt cgggccaggc taagtttagcc ctnaccatgc 120
cggt                                     124
```

&lt;210&gt; 790

&lt;211&gt; 293

<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (5)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (44)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (52)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (79)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (125)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (134)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (141)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (160)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (179)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (184)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (222)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (266)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (275)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (281)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (287)

<223> n equals a,t,g, or c

<400> 790

```
ggcanagcgg cagtccagga cctgcaggcc ccagaggacc tgtnggaccc antggacctc 60
ctggcaaaga tggaaccant ggacatccag gtgccattgg accaccaggg cctcgaggta 120
acagnnggtga aagnggatct nagggtccc cagggccacn cagggaacc agggccctnc 180
tggnacctcc tgggtccccct ggtecttgct gtggtggtgt tngagccgct gccattgctg 240
ggattgggag gttgaaaaag cttggncggt ttgnccccg ngtttantg ggg          293
```

<210> 791

<211> 129

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (93)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (104)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (113)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (116)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (119)

<223> n equals a,t,g, or c

<400> 791

gaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 60  
aaaaaaaaaa aaaaaaaggg gcggccgttt tanaggatcc aagnttacgt acncgngcnt 120  
gcaacgtca 129

<210> 792

<211> 267

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (247)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (250)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (253)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (265)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (267)

<223> n equals a,t,g, or c

<400> 792

ggcacgagcg gccttgagcg cgacgaagac gtgtaggcct gctttccgag gggcgagcgc 60  
ggcgccgcgg ggaggagggc ctgcgcgcag tcccgggcgc gttctagggc gccatgctgc 120



730

gggaagtctc gcgcgattag tggggaggtc tcgcggcttc tggctacttg gtggcgaggt 180  
gaagagcttc tgcaggtgct gggggcggcg aacgcggcgg gaaagaaaaa aaaaaaaaaa 240  
aaaaaanctn ggnaagtatt ttanan 267

&lt;210&gt; 793

&lt;211&gt; 453

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (68)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (347)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (443)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 793

ggggaaaagt tttggcagga gcgggagaat tctgcggacc tgcgggacgg cggcggtggc 60  
gccgtagnag ccggggacag gtcagtccga gacgagagaa gcggtcagtg ttgtacagtg 120  
ttttgggcat gcacgtgata ctacacacagt ggcttctgct caccaacaga tgaagacaga 180  
tgcaccaacg aggctgatgg gaaccatcct gtagaggtcc atctgcgttc agaccagac 240  
gatgccagag ctatgactgg gcctgcaggt gtggcgccga ggggagatca gccatggagc 300  
agccacagga ggaagcccct gaggtccggg aagaggagga gaaagangaa gtggcagaag 360  
cagaaggagc cccagagctc aattggggac cacagcatgc acttccttcc agcagctaca 420  
cagactctcc cggagctcct cgncaacctt atg 453

&lt;210&gt; 794

&lt;211&gt; 141

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (15)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (17)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

<222> (30)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (54)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (63)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (108)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (132)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (137)  
<223> n equals a,t,g, or c

<400> 794  
caacgaccgc gtttncntgg cacgggggtcn ggcccgcctg gccctgggaa agcntccac 60  
ggngggggcg cgccggtctc ccggagcggg accgggtcgg aggatggncg agaatacga 120  
gcgacggtgg tngtggnngt t 141

<210> 795  
<211> 167  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (46)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (55)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (56)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (61)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (93)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (112)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (146)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (149)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (164)

<223> n equals a,t,g, or c

<400> 795

```
ggggacccac cggaggggtcc agccaccagc cccctcacta atagcngcca ccccnncagc 60
ngcggcacag cagcagcgac gcagcggcga cantcagagc agggaggccg cnccacctgc 120
gggccggccg gagcgggcag ccccgangcnc cctccccggg cacncgc 167
```

<210> 796

<211> 331

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (8)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (16)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (20)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (34)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (41)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (54)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (56)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (58)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (61)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (79)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (88)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (90)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (91)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (101)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (104)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (105)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (114)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (115)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (116)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (123)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (124)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (125)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (126)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (131)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (132)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (146)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (192)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (225)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (228)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (241)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (242)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (244)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (260)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (280)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (328)  
<223> n equals a,t,g, or c

<400> 796  
aattcggnan cacgcnacgn cataccgtgg cagnttctgt ntgagacgaa catncnagnag 60  
nctccactca gctaatgtna caacatgngn nctacttctc nctnnctttt acannnacag 120  
gannnnngcc nnagttaata tatccngtgt acctcactgt ccaatatgaa aaccgtaaag 180  
tgccttatag gnatttgcgt aactaacaca ccctggttca ttganctnta cttgctgaag 240  
nngnaaaaga caggataagn tttcaatagt ggcataccan atgggacttt tgatgaaatg 300  
aatatcaata ttttctgcaa ttccatgngc t 331

<210> 797  
<211> 699  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (404)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (521)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (564)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (589)  
<223> n equals a,t,g, or c

737

<220>  
<221> misc feature  
<222> (597)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (598)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (635)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (643)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (657)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (678)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (695)  
<223> n equals a,t,g, or c

<400> 797  
gctccacctt actaccagac aaccttagcc aaaccattta cccaaataaa gtataggcga 60  
tagaaattga aacctggcgc aatagatata gtaccgcaag ggaaagatga aaaattataa 120  
ccaagcataa tatagcaagg actaaccctt ataccttctg cataatgaat taactagaaa 180  
taactttgca aggagagcca aagctaagac ccccgaaacc agacgagcta cctaagaaca 240  
gctaaaagag cacaccgctc tatgtagcaa aatagtggga agatttatag gtagaggcga 300  
caaacctacc gagcctggtg atagctgggt gtccaagata gaatcttagt tcaactttaa 360  
atgtgccac agaaccctct aaatccctt gttaaatttaa ctgntagtcc aaagaggaac 420  
agctctttgg aactaggaa aaaaccttgt agagagagta aaaaatttaa caccatagat 480  
aggcctaaaa gcagccacca attaagaaag cgttcaagct naacaccac tacctaaaaa 540  
aatcccaaac atataactga actnctacac ccaattgggc caatctatna ccctatnnaa 600  
gaactaatgg tagtataagt acatgaaaac cattnttctt cgnataagcc ttgcgtnaga 660  
attaaaacac tgaactgnac attaaacagc caatntcta 699

<210> 798

<211> 138



738

<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (115)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (120)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (127)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (128)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (133)  
<223> n equals a,t,g, or c

<400> 798  
cccggcacag agtcgatgct caataaatgt gtgttgactg catgaatgac ctggaaaaaa 60  
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaancccn 120  
gggggggncc ccncccc 138

<210> 799  
<211> 496  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (9)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (414)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (442)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (443)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (485)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (490)

<223> n equals a,t,g, or c

<400> 799

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cacactgtna tgctagcctc acgaaactgg aataagcctt cgaaaagaaa ttgtccttga 60
agcttgtatc tgatatacagc actggattgt agaacttggt gctgattttg accttgtatt 120
gaagttaact gttccccttg gtatttgttt aataccctgt acatatcttt gagttcaacc 180
tttagtacgt gtggcttggt cacttcgtgg ctaaggtaag aacgtgcttg tggaagacaa 240
gtctgtggct tgggtgagtct gtgtggccag cagcctctga tctgtgcagg gtattaacgt 300
gtcaaggctg agtgttcttg ggaattctct agaggctggc aagaaccagt tggttttgtc 360
cttgcggggt ctgtcaaggg ttggaaatcc caagccgtag gaccagttc cctnccttaa 420
ccgaagtctt tggccaaaca cnngggccgt aactggcctt gagttggaac ggttgcataa 480
gccgnaaagn atcaac 496
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<210> 800

<211> 516

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (12)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (29)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (30)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (44)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (80)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (107)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (122)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (149)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (157)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (164)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (166)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (169)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (173)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (183)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (188)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (190)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (193)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (199)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (208)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (220)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (256)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (270)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (273)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (275)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (294)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (296)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (335)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (336)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (341)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (362)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (370)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (487)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (500)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (501)  
<223> n equals a,t,g, or c

<400> 800

743

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gctgaaaaag gnggggggga gccaaattann acgcccagac ggantaaccc caggccccgc 60
cacaccaccc cttgccaaan tcatctgcct gctccccggg gggagangac cgccggcctc 120
tntactagc ccaccagccc accagggana aaataancca tganangcng cgnccgccac 180
ccngtgtncn cantcccnc cttcccgnnt cccttagaan cctgccgcgt cctatctcat 240
gacgctcatg gaaccncttt ctttgatctn ctntntctta tctccccctc ttntngttc 300
taaagaaaat cattttgatg caaggctctg cctggnatca natccgaagt gtcctgcag 360
tnaccctttn cctggcattt ctctccacg cgacaagtct gctagtgaga tcttgcatga 420
ctcactttgt ttccaaaacc cggggctatt ttgcatctca agtttcctgg ggcctgcttc 480
ctgtgtacca ctttaagggn nctgggccaa gactgt 516

```

&lt;210&gt; 801

&lt;211&gt; 284

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (1)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (6)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (12)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (28)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 801

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naagcncccg gngaacttgg ggaaggcncg cctgcaggta ccgggccgga attccccggg 60
cgaccttcgc gtttttatat atatagatat atatagatat atatagatat atatagatat 120
atatatatag atatatatat agatatatat agatatatat agatatatat agatatatat 180
atatatatag atatatatag atatagatat atatagatat atatagatat atatagatat 240
atatagatat atagatatat atatatctgg ctcatgcatg aaaa 284

```

&lt;210&gt; 802

&lt;211&gt; 153

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (46)

&lt;223&gt; n equals a,t,g, or c

744

<220>  
<221> misc feature  
<222> (92)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (119)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (134)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (140)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (143)  
<223> n equals a,t,g, or c

<400> 802  
cggacggctg tgtagcgcgt ggggtgtaaga cttgcccag tccanagca cctcacctcc 60  
cgaagccacc atccccaccc tgtcttcac anccgcctga aagccacaat gagaatgant 120  
cacactgagg cctngatgtn ctntaatcac ttg 153

<210> 803  
<211> 383  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (271)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (301)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (370)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (374)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (375)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (383)  
<223> n equals a,t,g, or c

<400> 803  
cacgtgagat taaaaccaat tttttcccca ttttttctcc ttttttctct tgctgcccac 60  
attgtgcctt tattttatga gcccagttt tctgggctta gtttaaaaaa aaaatcaagt 120  
ctaaacattg catttagaaa gcttttggtc ttggataaaa agtcatacac tttaaaaaaa 180  
aaaaaaactt ttccaggaa aatatattga aatcatgctg ctgagcctct attttctttc 240  
tttggatggt ttggattcag tattccttta nccataaatt tttagcattt aaaaattcac 300  
nggatggtac attaaagcaa taaactggct ttaatggatt acccaaaaaa aaaaaaaaaa 360  
aaaggggggn cgcnnccagag ggn 383

<210> 804  
<211> 509  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (94)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (397)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (399)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (401)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature



<222> (434)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (478)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (501)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (504)

<223> n equals a,t,g, or c

<400> 804

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ctctggagct cagcacagcc ctggagcacc agnggtacat tacttttctt gaagacctca 120
agagttttgt caagagccag tagagcagac agatgctgaa agccatagtt tcatggcagg 180
ctttggccag tgaacaaatc ctactctgaa gctagacatg tgctttgaaa tgattatcat 240
cctaataatca tgggggaaaa aataccagat ttaaattata tgttttgtgc tctcatttat 300
ttatcatttt tttctgtaca aatctattat ttctaggttt ttgtattaca tgatagacat 360
aaattgggtt atctcctcca ggcagtttgt cttttcnant nctccccctt caaccgtgtc 420
acaaagacca gacngtgctg ggaaagtttt ttttctccgt attgttaaag gttccatnca 480
attaggttta ataaaggctt ntnttcag 509
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<210> 805

<211> 753

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (648)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (668)

<223> n equals a,t,g, or c

<220>

<221> misc feature

747

&lt;222&gt; (718)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (736)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 805

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ncaaaacccac tccaccttac taccagacaa ccttagccaa accatttacc caaataaaagt 60
atagggcgata gaaattgaaa cctggcgcaa tagatatagt accgcaaggg aaagatgaaa 120
aattataacc aagcataata tagcaaggac taacccttat accttctgca taatgaatta 180
actagaata actttgcaag gagagccaaa gctaagaccc ccgaaaccag acgagctacc 240
taagaacagc taaaagagca caccctcta thtagcaaaa tagtgggaag atttataggt 300
agaggcgaca aacctaccga gcctggtgat agctggttgt ccaagataga atcttagttc 360
aactttaaat ttgccacacag aaccctctaa atccccttgt aaatttaact gttagtccaa 420
agaggaacag ctctttggac actaggaaaa aaccttgtag agagagtaaa aaatttaaca 480
cccatagtag gcctaaaagc agccaccaat taagaaagcg ttcaagctca acaccacta 540
cctaaaaaat cccaaacata taactgaact cctcacaccc aattggacca atctatcacc 600
ctatagaaga actaatggta gtataagtaa catgaaaaca ttctcctncc cataagcctg 660
cgtcaganta aaacctgact gacaattaac agcccaattc tacaatcaaa caacaagnca 720
ttattaccct tactgncaac ccaaccaggc atg 753
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&lt;210&gt; 806

&lt;211&gt; 404

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (11)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (352)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (383)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (396)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (398)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (403)

<223> n equals a,t,g, or c

<400> 806

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ggaagaagga ngaaaagcag gaagctggaa aggaaggtac tgcaccatct gaaaatgggtg 60
aaactaaagc tgaagaggta ctttccataa atacctccca ctgattgaat cagtgtcttt 120
aaagaaattt ctcaatcctt cagccggtga tagcacgttc ttaatgtctc tttttattgc 180
ctgtaatggt attgcagatc cacatctctc gctcaactgt taatgtctca acctccagag 240
gcacccacc cagcacactg tcagtaaagg ggcagaatga aacagtgaga gttaagggtta 300
caggaagaaa atttgcatgt ttgcaagtga ctagaatcag atagtaagtg gnggtgggtt 360
ttttttttta atcattatga aanagtggga agcttngnag gtna 404
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<210> 807

<211> 428

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (2)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (17)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (33)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (89)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (164)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (198)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (215)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (258)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (266)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (283)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (400)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (413)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (417)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (423)  
<223> n equals a,t,g, or c

<220>  
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<222> (426)  
<223> n equals a,t,g, or c

<400> 807

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750

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aggcagatgc tcctctggtg ggagggtgnt gggccggcaa gattgaagga tgtgcagggc 120
ttctctcag agccgcccac actgccttga tgtgtggagg ggangaaga tgggtaaggg 180
ctcaggaagt tgctccanga acagtagctg atganctgcc cagagtgcct ggctccagcc 240
tgtacccttg gtatgccttg aacatntggt ttccccaccc aantgaggct aagtctcttt 300
ttccttgat cagccaggcg aaattggggc ttgacaagg aattttctaa ggaaaccttg 360
ttaaccagac aaaacacaac cagggttaca ggggggtatg aagggttttc tgncccngga 420
ggnttnag 428
```

&lt;210&gt; 808

&lt;211&gt; 403

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (2)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (34)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (62)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (85)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (257)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (258)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (261)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

<222> (265)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (270)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (286)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (288)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (342)  
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<223> n equals a,t,g, or c

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cnccgctccg gggacagtgc caggngggga gtttgactgg ggcggtacac ctgtcaaacg 120  
gtaacgcagg tgtcctaagg cgagctcagg gaggacagaa acctcccggtg gagcagaagg 180  
gcaaaagctc gcttgatctt cattttcagt acgaatacag accgtgaaaag ccggggcctca 240  
cgatcctcct gaccttnncg ntttncagcn ggaggtgtca gaaaantnac cacagggata 300  
actcgcttgt cgcggccaag cgttcatagc gacgtcgctt tnccangtnc gatgtcggat 360  
cttcntatca ttgtnaagca gaattcacca agcgttgat tgt 403

<210> 809  
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<212> DNA  
<213> Homo sapiens

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<220>  
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753

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<220>  
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tttgaagacc acttggtgtg ttcacaaaac cagaagtaat tacaggggtg tcctgaaaag 120  
ccccatagtg attgagtcct caaaaccacc gattctgaga gcaaggaaga ttttggaga 180  
aaatctgact gtggattatg acaaagatta tcttttttct taagtaatct atttagatcg 240  
ggctgactgt acaaatgact cctggaaaaa actcttcacc tagtctagaa taagggaggt 300  
gggagaatga tgacttaccg tgaagtccct cccttgactg ccgcactgg gccctgttct 360  
gtgccctggg agcatnntgc ccagctaagt ggggttcagg cagtgggcag ctttcccaat 420  
nantcgattt ccattncagn gganttaaaa ccagttggcc aaatttccaa gnccttgnaa 480  
ntaaggantc catttaccaa cccgcggttt tgtggtcagt gcccgaaggg ggtaggttga 540  
agggggctta acaaacatgg aagtnggggg nanaagggat nan 583

<210> 810  
<211> 272  
<212> DNA  
<213> Homo sapiens



<220>  
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<222> (43)  
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<220>  
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<222> (163)  
<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
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<223> n equals a,t,g, or c

<220>  
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<220>  
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<220>  
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755

<220>  
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<222> (265)  
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<220>  
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<222> (266)  
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<400> 810  
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gtatacagat gaggggtgtcc gctgctgctt tccttcggaa tccagtgtt ccacagagat 120  
tancctgtan cttatatattg acattcttca ctgtctgttg ttanancnacc gtagcttttt 180  
accgttcact tccccttcca actatgtcca gatgtgcagg ctctccnct ctggactttc 240  
tccaaaggca ctgaccctng gnctnnactt tg 272

<210> 811  
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<212> DNA  
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<220>  
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<220>  
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<222> (252)  
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<220>  
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<222> (259)  
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<220>  
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cagatctttt taaaaagata cttctgtaac ttaagaaacc tgggcattta aatcatattt 120  
tgtcttttagg taaaagcttt ggtttggtt cgtgttttgt ttgtttcact tgtttccctc 180  
ccagccccaa accttttggt ctctccgtga acttaccttt ccttttttct ttctcttttt 240  
tttttttgga anattaatng ttncaataa aatttncatn gccattaaaa aaaaaaaaaa 300

<210> 812

<211> 478

<212> DNA

<213> Homo sapiens

<220>

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<222> (232)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (294)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (325)

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<220>

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<222> (427)

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<222> (445)

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<222> (460)

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<222> (468)

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<400> 812

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gaaattgaaa cctggcgcaa tagatatagt accgcaaggg aaagatgaaa aattatagcc 120
aagcataata tagcaaggac taacccttat accttctgca taatgaatta actagaaata 180
actttgcaag gagagccaaa gctaagaccc ccgaaaccag acgagctacc tnagaacagc 240
tgaaagagca caccctgcta ttagcaaaa tagtgggaag atttataggt tgangcgaca 300
aacctaccga gcctggtgat agctngttgt tccaanattg aatccttagt tccactttta 360
atttggtccc aaaaaccccc taattcccct tggtaattt taactgttng tccccaaaaa 420
ggaaccngct ctttgggacc cttanggaaa aaaccttgn ttaaaaaaa ttaaaaaa 478
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<210> 813

<211> 63

<212> DNA

<213> Homo sapiens

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<220>

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<222> (50)

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<222> (53)

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<222> (57)

<223> n equals a,t,g, or c

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<222> (59)

<223> n equals a,t,g, or c

<400> 813

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tga 63
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758

<210> 814  
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<212> DNA  
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<220>  
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gaggggtcctg ctg 73

<210> 815  
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<222> (93)  
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tctcctttgc ctggccggga gggccttggc ngccctcan cn 102

<210> 816  
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<212> DNA  
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<220>  
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cagtaccta caaaccaca ggtcctaaac taccaaacct gcattaaaaa tttcggttg 180

760

ggcgacctcg gagcagaacc caacctccga gcagtacatg ctaagacttc accagtcaaa 240  
gcgaactact atactcaatt gatccaataa cttgaccaac ggaacaagtt accctaggga 300  
taacagcgca atcctattct agagtccata tcaacaatan gggtttacnac ctcgatgnnn 360  
ggatcaggac attccaatg 379

<210> 817  
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<212> DNA  
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<220>  
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<220>  
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cgcggttcgct gcctccttca gctccaggat gatcggccag aagacgctct actccttttt 120
ctccccacg cccgccaaga agcgacangg cccaagncc cgagccggcc gtcaagggga 180
ccggngtggtc tngggttgct naagaaagcg gaatncgggg ggcatcccag ccaagaangn 240
cccggctggg naggagaanc tngggaacgc cggcctcctt ggncgctgaa ttncgaaca 300
ttttggaacc ggattccaga ggaacaaagg gcccgnggnc cttgnttaan aatncggggg 360
ccngnaaang ttncctcttg gggntttttg gaanaanaac ctgggaaaga aagcanctta 420
aggggggggn attttcgggg gaaancgtta tttttaatca aagctaaatt ggggattttt 480
tttncaaaaa ggaaaggaaa 500
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<210> 818

<211> 329

<212> DNA

<213> Homo sapiens

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<222> (45)

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<222> (52)

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765

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<220>  
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ctcactaatg ggaacanaag ctggagctcc accngtagg cggncggtct agaactagtg 120  
tgatcccccg ggctgcagga attcggcncg agaggaaana gaaaccgtct gaactatgct 180  
gnnngccatc atnctnggcc tcatcgcnnt tccatcccta cgcattgctt acatagcana 240  
cgaggtgacg atgccnccct taccatcaag atcanttgnc caccaatggt acttgaacct 300  
acgagtacac ccgaccaccn ggtggacta 329

<210> 819  
<211> 648  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (369)  
<223> n equals a,t,g, or c

<220>  
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<220>  
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<222> (547)

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<222> (626)

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<400> 819

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atctgttggt ctgtggtcac agtgacctta gctacatagc agactttccc aaatgtattg 120
attacaaata aacagttggt acttagcaag acctgaaaat atgtctgcag gtttctcctt 180
gaagcaaattg tgtgggatca ttgcatttcc agaaatctgc ctccctcacc ctccggtgac 240
agtatatgtc atgcctcact ttcttctagc tgagctttaa atcattagag cttaaattgt 300
cagatcggtc attgcctttc cagggttatt tagtaaagtt tgttgaaaac aaaaacgcct 360
tttcttggnr cttttttcag ttattttgaa ggccagcatc ctgattaaat gctgacacat 420
taatgaatga ccagcaacag ctttcagctc ttaaaaagac acttatattt gaatttacat 480
gctgggtacc tgggtccaat ggtggcaaaa ggccactntt cattaaaagg ggtcctccat 540
ttontanccc caaggacttc ctcanttttc aaattgggaa gggnacctaa aagggggtac 600
aattaaaacc ctggggtaaa gggggnaaaa aaaaaaaaaa aaaaaaaaaa 648
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<210> 820

<211> 469

<212> DNA

<213> Homo sapiens

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<220>

<221> misc feature

<222> (284)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (293)

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<220>  
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<220>  
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<220>  
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<220>  
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<220>  
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<220>  
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 cgatagaaat tgaaacctgg cgcaatagat atagtaccgc aagggaaga tgaaaaatta 120  
 taaccaagca taatatagca aggactaacc cctatacctt ctgcataatg aattaactag 180  
 aaataacttt gcaaggagag ccaaagctaa aacccccaat aaaccttgaa cagtgaanaa 240  
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaacctcgag gtcnacggtg tcnataacct 300  
 tgatatacnaa ttcggcacna gcaaccttca ttccccaacc cacgccggag gctgcgcctg 360  
 caggacctgn ctgaccgatt ggtggatcct ctgaanatga acacgactca ccactgctca 420  
 ncgaggcntg cttgagcaaa atccgccaat tataaaaaaa aaacnctcc 469

<210> 821  
 <211> 432  
 <212> DNA  
 <213> Homo sapiens

<220>

768

<221> misc feature  
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<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (385)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (419)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (422)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (425)  
<223> n equals a,t,g, or c

<400> 821  
ggcacgagag aaactgtgtg tgaggggaag aggcctgttt cgctgtcggg tctctagttc 60  
ttgcacgctc tttaagagtc tgcactggag gaactctgcc attaccagct cccttggttc 120  
agaaggaagg ggaaacatac atttattcat gccagtctgt tgcattgcagg ctttttggct 180  
tcctaccttg caacaaaata attgcaccaa ctccttagtg ccgattccgc ccacagagag 240  
tcctggagcc acagtctttt ttgctttgca ttgtaaggag agggactaaa gtgctagaga 300  
ctatgtcgcct ttcctgagct aacgagagcg ctcgtgaact ggantcaact gctttcaggg 360  
aaaaagaaaa aaaaaaaaaa aaaanccggg ggggggcccg gtaacccatt tccccctana 420  
gngngggggt tt 432

<210> 822  
<211> 428  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (323)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (367)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature

<222> (382)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (385)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (425)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (427)  
<223> n equals a,t,g, or c

<400> 822  
aagtctcttc agtgcaactcg ctccctctctt ggctaaggca tgcattagcc actacacaag 60  
tcattagtga aagtggctctt ttatgtcctc ccagcagaca gacatcaagg atgagttaac 120  
caggagacta ctctgtgga ctgtggagct ctggaaggct tgggtgggagt gaatttgccc 180  
acaccttaca attgtggcag gatccagaag agcctgtctt tttatatoca ttccttgat 240  
gtcattgggc ctctcccacc gatttcatta cggtgccacg catccatggg atctggggta 300  
gtccggaaaa acaaaaggag ggnagacagc ctggtaatgg ataagatcct taccacagtt 360  
ttcccanggg gaatacctta tnaanccttc aacttttttt tttcccttaa gaattaaaac 420  
ggggnana 428

<210> 823  
<211> 100  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (32)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (54)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (63)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (71)



<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (78)

<223> n equals a,t,g, or c

<400> 823

ctcagctcct gggggctcct gctactctgg gntcccgagg gtgccaaaat gtgncatcca 60  
agntgaccca ntctccgncc ctccctgtct gcagctggta 100

<210> 824

<211> 173

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (79)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (111)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (117)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (156)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (165)

<223> n equals a,t,g, or c

<400> 824

cggacgcgtg ggcggacgcg tgggaggacg cgtggggccga gaaccacagg tgtacaccct 60  
gccccatcc cgggaggana tgaccaagaa acagtcagct gaactgcctg nttctanagg 120  
tttctatccc acgaaatccc cttgaattgg gaaacnattg ggcanccgaa aaa 173

<210> 825

<211> 341

<212> DNA

<213> Homo sapiens

771

<220>  
<221> misc feature  
<222> (283)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (313)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (317)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (335)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (339)  
<223> n equals a,t,g, or c

<400> 825  
cccaaacc ca ctccacctta ctaccagaca accttagcca aaccatttac ccaaataaag 60  
tataggcgat agaaattgaa acctggcgca atagatatag taccgcaagg ggaaagatga 120  
aaaattataa ccaagcataa tatagcaagg actaacccct ataccttctg cataatgaat 180  
taactagaaa taactttgca aggagagcca aagctaagac ccccgaaacc agaacgagct 240  
accttagaac agcttaaaga gcacaccct ctatttttgc canaatagtg ggaaagattt 300  
ataggttgaa ggnaacnaac ctaccgagcc tggtnaatnc t 341

<210> 826  
<211> 492  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (337)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (416)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (446)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (471)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (475)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (480)

<223> n equals a,t,g, or c

<400> 826

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gcaaaccac tccaccttac taccagacaa ccttagccaa accatttacc caaataaagt 60
ataggcgata gaaattgaaa cctggcgcaa tagatatagt accgcaaggg aaagatgaaa 120
aattataacc aagcataata tagcaaggac taacccttat accttctgca taatgaatta 180
actagaaata actttgcaag gagagccaaa gctaagaccc ccgaaaccag acgagctacc 240
taagaacagc taaaagagca caccgtcta tgtagcaaaa tagtgggaag atttataggt 300
agaggcgaca aacctaccga gcctggtgat agctggntgt ccaagataga atcttagttc 360
aactttaaat ttgcccacag aacctcttaa atccccttgt aaatttaact gttagnccaa 420
agaggaacaa gctctttgga cactangaaa aaaccttgta tagagaggaa naaanatttn 480
acaaccata ct 492
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<210> 827

<211> 290

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (59)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (230)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (250)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (262)

773

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (264)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (290)

<223> n equals a,t,g, or c

<400> 827

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ggtcgtgctc tcccgggccc ggtccgagcc gcgacgggcg aggggaggac gttcgtggng 60
aacgggaccg tccttctcgc tccgccccgc ggggggtccc tcgtctctcc tctccccgcc 120
cgccggcggt gcgtgtggga aggcgtgggg tgcggacccc ggcccacact cgccgtcccc 180
cccgcgcct tctgcgtcgc ggggtcgggc cggcggggtc ctctgacgcn gcagacagcc 240
ctcgtgtctn cctccagtgg angncgactt gcgggaggta ctctacgan 290
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<210> 828

<211> 420

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (149)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (334)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (382)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (396)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (403)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (405)

<223> n equals a,t,g, or c

<400> 828

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gggtcgaccc acgcgtccgg cagcacggaa aaagaaggtc tcctccacga agcgacactg 60
agcgtgcacc aagggttggt tctgcggggg ccttggaagt cctgctcttc tcccgcacct 120
ccatggatgc actgctgccg agcagagcng cctctgccag gccccgccct gggattccta 180
gagactagct tcagttttgc tttttttttt aagtgggaga aggggtggga gttatcactg 240
gggaagagag gaccggccac ctgtccagca tgggtccag agccttcctc tctcacaggg 300
cagagtcttg tcggcaaggc agcctcctgg ccantttctc tgctcatgtt tctggtttagc 360
agagttcaga gccaattgtt tnacttcttg gttgtncccg tgnangaagc ctttcaaac 420
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<210> 829

<211> 298

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (19)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (20)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (30)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (56)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (57)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (109)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (125)

<223> n equals a,t,g, or c

<220>  
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<222> (129)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (171)  
<223> n equals a,t,g, or c

<220>  
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<222> (181)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (191)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (267)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (268)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (269)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (281)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (287)  
<223> n equals a,t,g, or c

<400> 829  
ttcagaaaaa acaatagtnn tgtgcctctn tcttctcaaa caatggatga cacaanncta 60  
tggagagtga caaaatggtg acaggtagct ggggacctag gctatctcnc catgaagggt 120  
gttcngctna ttgtatatct gtgtatgtag tgtaactata ttgtacaatg ngaagactgt 180  
naactactat ntagggttgt tgcagattga aatttagttg tctcattggc tgtctgagga 240

agtggtggact tctatatata gatctannnt gaaaactgct ncatgantga aaaccaca 298

<210> 830

<211> 516

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (1)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (5)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (10)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (21)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (35)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (408)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (475)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (477)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (497)

<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (513)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (515)  
<223> n equals a,t,g, or c

<400> 830  
ncggnaactn ctcactatag ntgaaagctg gtacncctgc aggtaccggt ccggaattcc 60  
cgggggcatc cccttgcccc caagagaccc gacgcttgct tcatggccta cacgttcgag 120  
agagagtctt cgggagagga ggaggagtag ggccgcctcg gggctgggca tccggccccct 180  
ggggccaccc cttgtcagcc ggggtgggtag gaaccgtaga ctcgctcatc tcgcctgggt 240  
ttgtccgcat gttgtaatcg tgcaataaaa cgctcaactcc gaattagcgg tgtatttctt 300  
gaagtttaat attgtgtttg tgatactgaa gtatttgctt taattctaaa taaaaattta 360  
tattttactt ttttattgct ggtttaagat gattcagatt atccttgnac tttgaggaga 420  
agtttcttat ttggagcttt tggaacagc ttaagctttt aacttggaat gatangnatt 480  
aatccccctt attggtntcc aaaagccaat aangng 516

<210> 831  
<211> 636  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (414)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (453)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (530)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (617)  
<223> n equals a,t,g, or c

<400> 831  
ggaaaaaaat gagttccatt taaaattttg gcatatggca ttttctaact taggaagcca 60  
caatgttctt ggcccatcat gacattgggt agcattaact gtaagttttg tgcttccaaa 120  
tcactttttg gtttttaaga atttcttgat actcttatag cctgccttca attttgatcc 180



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tttattcttt ctatttgta ggtgcacaag attaccttcc tgttttagcc ttctgtcttg 240
tcaccaacca ttcttacttg gtggccatgt acttggaata aggccgcatg atctttcttg 300
ctccactcag tgtctaaggc accctgcttc ctttgcttgc atcccacaga ctatttcctt 360
catcctatct actgcagcaa atctctcctt agttgatgag actgtgttta tctnccctta 420
aaaccctacc taccctgaat ggtctgtcat tgnctgcctt taaaatcctt cctctttctt 480
cctcctctat tctctaaata atgatggggc ttaagttata cccaaagctn actttacaaa 540
atatttcctc aagactttgc agaaacacca acaaatgcc atttaaaaaa ggggattttc 600
tttaaaggaa ctctaanaca ggcaagggtc tgatgt 636

```

<210> 832

<211> 466

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (421)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (443)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (446)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (453)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (466)

<223> n equals a,t,g, or c

<400> 832

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gatcagatta tgagttactg tttaaaagaa aaatgctgtt tattcatgct gaggtgattc 60
agttccctcc ttcttacaga agtattttaa ttcacccac actagaaatg cagcatcttt 120
gtggacgtct ttttcacaag cctccaaggc tccttagatt gggctgttac taaaagtaca 180
ttaaaacact cttgtttatc gaagtatatt gatgtattct aaagctagta aacttcctta 240
acgtttaatt gccctacaga tgcttctctt gctgtgggtt ttcttttgtt agtggcttga 300
aataattatt ttctgttctt attaatacat aagtgtattt tgcacaaaaa aattaacctg 360
gtcaaatagt gattacaaaa atatataatta ataatcttgg gcaaattttt gccatttata 420
ngaaaacatt ttaaacccac ggntangttc tanatttatt ctttcn 466

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<210> 833

<211> 405

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (237)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (278)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (335)

<223> n equals a,t,g, or c

<400> 833

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ttttaattca acccagccat gcaatgccaa ataatagaat tgctccctac cagctgaaca 60
gggaggagtc tgtgcagttt ctgacacttg ttgttgaaca tggctaaata caatgggtat 120
cgctgagact aagttgtaaa aaattaacaa atgtgctgct tggttaaaat ggctacactc 180
atctgactca ttctttattc tatttttagtt ggtttgatc ttgcctaagg tgcgtantcc 240
aactcttggt attaccctcc taatagtcac actagtantc atactccctg gtgttatgta 300
ttctctaaaa gctttaaatg tctgcattgc aaccngccat caaatattga atgggctctc 360
ttttggctgg aattacaaac tcaaaaaatg tttctcagga aaaaa 405
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<210> 834

<211> 402

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (277)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (332)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (354)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (359)

<223> n equals a,t,g, or c

780

<220>  
<221> misc feature  
<222> (390)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (400)  
<223> n equals a,t,g, or c

<400> 834  
gcaaaccac aggtcctaaa ctaccaaacc tgcattaaaa atttcggttg gggcgacctc 60  
ggagcagaac ccaacctccg agcagtacat gctaagactt caccagtcaa agcgaactac 120  
tataactcaat tgatccaata acttgaccaa cggaacaagt taccctaggg ataacagcgc 180  
aatcctattc tagagtccat atcaacaata gggtttacga cctcgatgtt ggatcaggac 240  
atcccgatgg tgcagccgct attaaagggt cgtttgntca acgattaaag tcctacgtga 300  
tctgagttca gaccggagta atccaggtcg gnttctatct acttcaaatt cctncctgna 360  
cgaaaggaca agagaaataa gggctacttn acaaagcgcn tt 402

<210> 835  
<211> 121  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (1)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (4)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (40)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (77)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (100)  
<223> n equals a,t,g, or c

<220>

<221> misc feature  
<222> (110)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (117)  
<223> n equals a,t,g, or c

<400> 835  
nttnaaaaaa aaaaaaaaaa aaaaaaaaaa aagaaaaaan aaaaaaaaaa aaaaaaaaaa 60  
aaaaagggcg gccgttntaa aggatccaag cttacgtacn cgtgcatgcn acgtcanagc 120  
t 121

<210> 836  
<211> 411  
<212> DNA  
<213> Homo sapiens

<220>  
<221> misc feature  
<222> (340)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (344)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (357)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (386)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (408)  
<223> n equals a,t,g, or c

<400> 836  
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acttgtgtgtt ggggtcagtc cgcgcgccgc tcggtcgtta ccgcgagggc ctggtggcct 120  
tcaggctgga cggcgcgggt cagccctggg ttgccggcct ctgggtcttt gaacagccgc 180  
gatgtcgatc ttcaccccca ccaaccagat ccgcctaacc aatgtggccg tggtagcgat 240  
gaagcgcgcc aggaagcgtc tcgaaatcgc ttgctacaga aacaagtcgt cggctggcgg 300  
agggtcttgg aaaaagactt gatgaatttt gcagaccan caangtttgt aaagttncca 360

782

aagtcagttt ccaaaaggaa attcancagg ggtttgaaa atgccaanga a 411

<210> 837

<211> 386

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (381)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (383)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (384)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (385)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (386)

<223> n equals a,t,g, or c

<400> 837

gcggcagctc agcaagtggg ggaccaggcc acagaggcgg ggcagaaagc catggaccag 60  
ctggccaaga ccaccagga aaccatcgac aagactgcta accaggcctc tgacaccttc 120  
tctgggatcg ggaaaaaatt cggcctcctg aaatgacagc agggagactt gggtcggcct 180  
cctgaaatga tagcaggag acttggtga ccccccttc aggcgccatc tagcacagcc 240  
tggccctgat ctccgggcag ccaccacctc ctcggtctgc cccctcatta aaattcacgt 300  
tccccaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 360  
aaaaaaaaa aaaaaaaaaa ngnnnn 386

<210> 838

<211> 124

<212> DNA

<213> Homo sapiens

<400> 838

gctttcaata gatcgacgag agggagctgc tctgctacgt acgaaacccc gaccagaag 60  
caggtcgtct acgaatggtt tagcgccagg ttccccacga acgtgcggtg cgtgacgggc 120  
gagg 124

<210> 839  
<211> 270  
<212> DNA  
<213> Homo sapiens

<220>  
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<222> (26)  
<223> n equals a,t,g, or c

<220>  
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<222> (56)  
<223> n equals a,t,g, or c

<220>  
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<222> (107)  
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<220>  
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<220>  
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<220>  
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<222> (260)  
<223> n equals a,t,g, or c

<220>  
<221> misc feature  
<222> (261)  
<223> n equals a,t,g, or c

<400> 839

atctggttgt ggttacaatg aaaatnagaa gcattattga tggattcgca taagcncaat 60  
gtgatgtcct gcgccgttct gccccctctc ccttccaggg tgaggggctg gggtaggggt 120  
taatgttcgn accagtgtg gctgttcccc tcaccctaac cctctcccca aaggncgnag 180  
gggcccggtt acccaattcg cctatatgtg agtcgtatta caattcactg gccgtcgttt 240  
tacaagacgn agggaggagn ntgatgaaaa 270

<210> 840

<211> 430

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (210)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (262)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (263)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (348)

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<220>

<221> misc feature

<222> (369)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (390)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (395)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (409)

<223> n equals a,t,g, or c

<400> 840  
ctctacatca cgcgccccgac cttagctctc accatcgctc ttctactatg aacccccctc 60  
cccataccca accccctggt caacctcaac ctaggcctcc tatttattct agccacctct 120  
agcctagccg ttactcaat cctctgatca gggtagcat caaactcaaa ctacgccctg 180  
atcggcgcac tgcgagcagt agcccaaacn atctcatatg aagtcaccct agccatcatt 240  
cctactatca acattactaa tnngttggt cctttaacct ctccaccctt atcacaacac 300  
aagaacactc ctgaatatcc tgccatcata accctttggc catatatnat tatcttccac 360  
actagggana acaacgaacc cccttcgaan cttgngaaag ggaatttcna ataattctca 420  
ggttcaaatt 430

<210> 841

<211> 650

<212> DNA

<213> Homo sapiens

<220>

<221> misc feature

<222> (519)

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<220>

<221> misc feature

<222> (555)

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<220>

<221> misc feature

<222> (564)

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<220>

<221> misc feature

<222> (573)

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<220>

<221> misc feature

<222> (589)

<223> n equals a,t,g, or c

<220>

<221> misc feature

<222> (634)

<223> n equals a,t,g, or c

<400> 841

gccgtcatct actctaccat ctttgcaggc acatcatca cagcgctaag ctgcactga 60  
ttttttacct gagtaggcct agaaataaac atgctagctt ttattccagt tctaaccaaa 120  
aaaataaacc ctgcgtccac agaagctgcc atcaagtatt tcctcacgca agcaaccgca 180  
tccataatcc ttctaatagc tatectcttc aacaatatac tctccggaca atgaaccata 240  
accaataata ccaatcaata ctcatcatta ataatacataa tggctatagc aataaaaacta 300



786

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ggaatagccc cctttcactt ctgagtccca gaggttaccc aaggcacccc tctgacatcc 360
ggcctgcttc ttctcacatg acaaaaaacta gcccccatct caatcatata ccaaattctct 420
ccctcactag acgtaagcct tctcctcact ctctcaatct tatccatcat agtaggcagt 480
tgaggggtgga ttaaaccaaa acccagctac gcaaaatcnt agcatacttc ctcaattacc 540
cacataggat gaatnaatag cagnttctac cgnacaaccc ttacataanc atttcttaaa 600
ttaactaatt atattaatcc taactactac ggantctact actaacttaa 650

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&lt;210&gt; 842

&lt;211&gt; 509

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (438)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (455)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (462)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (468)

&lt;223&gt; n equals a,t,g, or c

&lt;220&gt;

&lt;221&gt; misc feature

&lt;222&gt; (482)

&lt;223&gt; n equals a,t,g, or c

&lt;400&gt; 842

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gcctgtgtct gctaaaaaag aaaagaaagt ttcctgcatg ttcattcctg atgggcgggt 60
gtctgtctct gctcgaattg acagaaaagg attctgtgaa ggtgatgaga ttccatcca 120
tgctgacttt gagaatacat gttcccgaat tgtgggtcccc aaagctgcca ttgtggcccc 180
ccacacttac cttgccaatg gccagaccaa ggtgctgact cagaagttgt catcagtcag 240
aggcaatcat attatctcag ggacatgcgc atcatggcgt ggcaagagcc ttcgggttca 300
gaagatcagg ccttctatcc tgggctgcaa catccttcga gttgaatatt ccttactgat 360
ctatgttagc gttcctggat ccaagaaggt catccttgac ctgcccctgg taattggcag 420
cagatcaggt ctaagcanca gaacatccag ctggncagcc cnaaccanct ctgaagatga 480
gntgggtaga tctgaacatc ctgataccc 509

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&lt;210&gt; 843

&lt;211&gt; 158

&lt;212&gt; PRT

787

&lt;213&gt; Homo sapiens

&lt;400&gt; 843

Lys Arg Asp Trp Val Ile Pro Pro Ile Ser Cys Pro Glu Asn Glu Lys  
1 5 10 15

Gly Pro Phe Pro Lys Asn Leu Val Gln Ile Lys Ser Asn Lys Asp Lys  
20 25 30

Glu Gly Lys Val Phe Tyr Ser Ile Thr Gly Gln Gly Ala Asp Thr Pro  
35 40 45

Pro Val Gly Val Phe Ile Ile Glu Arg Glu Thr Gly Trp Leu Lys Val  
50 55 60

Thr Glu Pro Leu Asp Arg Glu Arg Ile Ala Thr Tyr Thr Leu Phe Ser  
65 70 75 80

His Ala Val Ser Ser Asn Gly Asn Ala Val Glu Asp Pro Met Glu Ile  
85 90 95

Leu Ile Thr Val Thr Asp Gln Asn Asp Asn Lys Pro Glu Phe Thr Gln  
100 105 110

Glu Val Phe Lys Gly Ser Val Met Glu Gly Ala Leu Pro Gly Thr Ser  
115 120 125

Val Met Glu Val Thr Ala Thr Asp Ala Asp Asp Gly Cys Gly Thr Pro  
130 135 140

Thr Met Pro Pro Ser Leu Thr Pro Ser Ser Ala Gln Asp Pro  
145 150 155

&lt;210&gt; 844

&lt;211&gt; 601

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

788

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (106)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (152)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (358)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (383)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 844

Thr	Glu	Leu	Leu	Lys	Ser	Ala	Ala	Arg	His	Gly	Thr	Ala	Glu	Ser	Ala
1				5					10					15	

Pro	Trp	Pro	Arg	Gly	Gln	Gly	Trp	Gln	Gln	Trp	Gln	Gln	Gln	Trp	Arg
			20				25						30		

Arg	Arg	Trp	Xaa	Ser	Trp	Arg	Lys	Asp	Arg	Ala	Arg	Thr	Arg	Arg	Gln
		35					40					45			

Glu	Glu	Leu	Ala	Leu	Ser	Gln	Glu	Pro	Lys	Ser	Ser	Ser	Arg	Gly	Xaa
		50				55					60				

Ser	Pro	Gly	Ala	Ser	Pro	Ala	Ser	Pro	Thr	Ser	Gln	Gln	Phe	Cys	Cys
65					70					75				80	

Phe	Arg	Leu	Asp	Gln	Val	Ile	His	Ser	Asn	Pro	Ala	Gly	Ile	Gln	Gln
				85					90					95	

Ala	Leu	Ala	Gln	Leu	Ser	Xaa	Arg	Gln	Xaa	Ser	Val	Thr	Ala	Pro	Gly
			100					105					110		

Gly	His	Pro	Arg	His	Lys	Pro	Gly	Pro	Pro	Gln	Ala	Pro	Gln	Gly	Pro
		115					120					125			

Ser	Pro	Arg	Pro	Pro	Thr	Arg	Tyr	Glu	Pro	Gln	Arg	Val	Asn	Ser	Gly
		130				135					140				

789

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Leu Ser Ser Asp Pro His Phe Xaa Glu Pro Gly Pro Met Val Arg Gly
145                150                155                160

Val Gly Gly Thr Pro Arg Asp Ser Ala Gly Val Ser Pro Phe Pro Pro
                165                170                175

Lys Arg Arg Glu Arg Pro Pro Arg Lys Pro Glu Leu Leu Gln Glu Glu
                180                185                190

Ser Leu Pro Pro Pro His Ser Ser Gly Phe Leu Gly Ser Lys Pro Glu
                195                200                205

Gly Pro Gly Pro Gln Ala Glu Ser Arg Asp Thr Gly Thr Glu Ala Leu
                210                215                220

Thr Pro His Ile Trp Asn Arg Leu His Thr Ala Thr Ser Arg Lys Ser
225                230                235                240

Tyr Arg Pro Ser Ser Met Glu Pro Trp Met Glu Pro Leu Ser Pro Phe
                245                250                255

Glu Asp Val Ala Gly Thr Glu Met Ser Gln Ser Asp Ser Gly Val Asp
                260                265                270

Leu Ser Gly Asp Ser Gln Val Ser Ser Gly Pro Cys Ser Gln Arg Ser
                275                280                285

Ser Pro Asp Gly Gly Leu Lys Gly Ala Ala Glu Gly Pro Pro Lys Arg
                290                295                300

Pro Gly Gly Ser Ser Pro Leu Asn Ala Val Pro Cys Glu Gly Pro Pro
305                310                315                320

Gly Ser Glu Pro Pro Arg Arg Pro Pro Pro Ala Pro His Asp Gly Asp
                325                330                335

Arg Lys Glu Leu Pro Arg Glu Gln Pro Leu Pro Pro Gly Pro Ile Gly
                340                345                350

Thr Glu Arg Ser Gln Xaa Thr Asp Arg Gly Thr Glu Pro Gly Pro Ile
                355                360                365

Arg Pro Ser His Arg Pro Gly Pro Pro Val Gln Phe Gly Thr Xaa Asp
                370                375                380

Lys Asp Ser Asp Leu Arg Leu Val Val Gly Asp Ser Leu Lys Ala Glu
385                390                395                400

Lys Glu Leu Thr Ala Ser Val Thr Glu Ala Ile Pro Val Ser Arg Asp
                405                410                415

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790

Trp Glu Leu Leu Pro Ser Ala Ala Ala Ser Ala Glu Pro Gln Ser Lys  
 420 425 430

Asn Leu Asp Ser Gly His Cys Val Pro Glu Pro Ser Ser Ser Gly Gln  
 435 440 445

Arg Leu Tyr Pro Glu Val Phe Tyr Gly Ser Ala Gly Pro Ser Ser Ser  
 450 455 460

Gln Ile Ser Gly Gly Ala Met Asp Ser Gln Leu His Pro Asn Ser Gly  
 465 470 475 480

Gly Phe Arg Pro Gly Thr Pro Ser Leu His Pro Tyr Arg Ser Gln Pro  
 485 490 495

Leu Tyr Leu Pro Pro Gly Pro Ala Pro Pro Ser Ala Leu Leu Ser Gly  
 500 505 510

Val Ala Leu Lys Gly Gln Phe Leu Asp Phe Ser Thr Met Gln Ala Thr  
 515 520 525

Glu Leu Gly Lys Leu Pro Ala Gly Gly Val Leu Tyr Pro Pro Pro Ser  
 530 535 540

Phe Leu Tyr Ser Pro Ala Phe Cys Pro Ser Pro Leu Pro Asp Thr Ser  
 545 550 555 560

Leu Leu Gln Val Arg Gln Asp Leu Pro Ser Pro Ser Asp Phe Tyr Ser  
 565 570 575

Thr Pro Leu Gln Pro Gly Gly Gln Ser Gly Phe Leu Pro Ser Gly Ala  
 580 585 590

Pro Ala Ser Arg Cys Phe Tyr Pro Trp  
 595 600

<210> 845

<211> 67

<212> PRT

<213> Homo sapiens

<400> 845

Thr Gln Lys Thr Ser Ser Leu Leu Pro Ala Leu Ser Leu Gln Leu Pro  
 1 5 10 15

Leu Leu Thr Arg Phe Ser Ile Met Cys Ser Val Lys Glu Glu Phe Trp  
 20 25 30

791

Arg Val Gln Ser Ile Ile Thr Glu Leu Val Leu Lys Gly Glu Phe Gly  
                   35                                  40                                  45

Val Glu Glu Ala Met Lys Leu Ile Thr Gly Thr Glu Ala Lys Tyr Lys  
                   50                                  55                                  60

Ser Ile Asp  
       65

&lt;210&gt; 846

&lt;211&gt; 146

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 846

Ser Gln Gly Pro Asp His Pro Ser Ser Gln Leu Gln Pro Leu Asn Xaa  
       1                                  5                                  10                                  15

Ser Leu Ser His Leu Leu Val Pro Cys Leu Ser Ile Met Ser Leu Leu  
                   20                                  25                                  30

Asn Lys Pro Lys Ser Glu Met Thr Pro Glu Glu Leu Gln Lys Arg Glu  
                   35                                  40                                  45

Glu Glu Glu Phe Asn Thr Gly Pro Leu Ser Val Leu Thr Gln Ser Val  
                   50                                  55                                  60

Lys Asn Asn Thr Gln Val Leu Ile Asn Cys Arg Asn Asn Lys Lys Leu  
       65                                  70                                  75                                  80

Leu Gly Arg Val Lys Ala Phe Asp Arg His Cys Asn Met Val Leu Glu  
                   85                                  90                                  95

Asn Val Lys Glu Met Trp Thr Glu Val Pro Lys Ser Gly Lys Gly Lys  
                   100                                  105                                  110

Lys Lys Ser Lys Pro Val Asn Lys Asp Arg Tyr Ile Ser Lys Met Phe  
                   115                                  120                                  125

Leu Arg Gly Asp Ser Val Ile Val Val Leu Arg Asn Pro Leu Ile Ala  
                   130                                  135                                  140

Gly Lys  
       145

792

&lt;210&gt; 847

&lt;211&gt; 184

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (179)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 847

Ala	Arg	Met	Ala	Ala	Asp	Lys	Xaa	Pro	Ala	Ala	Gly	Pro	Arg	Ser	Arg
1				5					10					15	

Ala	Ala	Met	Ala	Gln	Trp	Arg	Lys	Lys	Lys	Gly	Leu	Arg	Lys	Arg	Arg
			20					25					30		

Gly	Ala	Ala	Ser	Gln	Ala	Arg	Gly	Ser	Asn	Ser	Glu	Asp	Gly	Glu	Phe
			35				40						45		

Glu	Ile	Gln	Ala	Glu	Asp	Asp	Ala	Arg	Ala	Arg	Lys	Leu	Gly	Pro	Gly
	50					55					60				

Arg	Pro	Leu	Pro	Thr	Phe	Pro	Thr	Ser	Glu	Cys	Thr	Ser	Asp	Val	Glu
	65				70					75					80

Pro	Asp	Thr	Arg	Glu	Met	Val	Arg	Ala	Gln	Asn	Lys	Lys	Lys	Lys	Lys
				85					90					95	

Ser	Gly	Gly	Phe	Gln	Ser	Met	Gly	Leu	Ser	Tyr	Pro	Val	Phe	Lys	Gly
			100					105						110	

Ile	Met	Lys	Lys	Gly	Tyr	Lys	Val	Pro	Thr	Pro	Ile	Gln	Arg	Lys	Thr
	115						120						125		

Ile	Pro	Val	Ile	Leu	Asp	Gly	Lys	Asp	Val	Val	Ala	Met	Ala	Arg	Thr
	130					135					140				

Gly	Ser	Gly	Lys	Thr	Ala	Cys	Phe	Leu	Leu	Pro	Met	Phe	Glu	Arg	Leu
145					150					155					160

Lys	Thr	His	Ser	Ala	Gln	Thr	Gly	Ala	Arg	Ala	Ser	Ser	Ser	Arg	Arg
				165					170					175	

793

Pro Glu Xaa Trp Pro Cys Arg Pro  
180

&lt;210&gt; 848

&lt;211&gt; 160

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 848

Ala Arg Ala Ser Ser Glu Cys Ala Arg Cys Ala Ala Ala Val Arg Thr  
1 5 10 15

Cys Arg Arg Arg His Arg His His Ala Gln Leu Arg Arg His Leu Glu  
20 25 30

Asp Ala Xaa Ser Glu Asn Phe Asp Glu Leu Leu Lys Ala Leu Gly Val  
35 40 45

Asn Ala Met Leu Arg Lys Val Ala Val Ala Ala Ala Ser Lys Pro His  
50 55 60

Val Glu Ile Arg Gln Asp Gly Asp Gln Phe Tyr Ile Lys Thr Ser Thr  
65 70 75 80

Thr Val Arg Thr Thr Glu Ile Asn Phe Lys Val Gly Glu Gly Phe Glu  
85 90 95

Glu Glu Thr Val Asp Gly Arg Lys Cys Arg Ser Leu Ala Thr Trp Glu  
100 105 110

Asn Glu Asn Lys Ile His Cys Thr Gln Thr Leu Leu Glu Gly Asp Gly  
115 120 125

Pro Lys Thr Tyr Trp Thr Arg Glu Leu Ala Asn Asp Glu Leu Ile Leu  
130 135 140

Thr Phe Gly Ala Asp Asp Val Val Cys Thr Arg Ile Tyr Val Arg Glu  
145 150 155 160



794

&lt;210&gt; 849

&lt;211&gt; 75

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (50)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 849

Val	Gln	Asn	Val	Gly	Tyr	Gln	Ser	Lys	His	Cys	Gly	Ala	Val	Xaa	Tyr
1				5					10					15	

Ala	Arg	Leu	Pro	Cys	Glu	Met	Ile	Gln	Asp	Gln	Asn	Lys	Ala	Leu	Asp
		20						25					30		

Cys	Ser	Lys	Thr	Gln	Asn	Ser	Ser	Arg	Ala	Glu	Gly	Gly	Arg	Leu	Ile
		35				40						45			

Trp	Xaa	Glu	Gly	Pro	Lys	Tyr	Lys	Thr	Asp	Gly	Leu	Arg	Leu	Glu	Thr
	50					55					60				

Arg	Gly	Leu	Arg	Trp	Lys	Ala	His	Val	Pro	Arg
65					70				75	

&lt;210&gt; 850

&lt;211&gt; 383

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (299)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 850

Ser	Thr	His	Ala	Ser	Ala	His	Ala	Ser	Val	Ala	Asn	Glu	Val	Ile	Lys
1				5					10					15	

Cys	Lys	Ala	Ala	Val	Ala	Trp	Glu	Ala	Gly	Lys	Pro	Leu	Ser	Ile	Glu
		20						25					30		

795

Glu Ile Glu Val Ala Pro Pro Lys Ala His Glu Val Arg Ile Lys Ile  
                   35                                  40                                  45  
 Ile Ala Thr Ala Val Cys His Thr Asp Ala Tyr Thr Leu Ser Gly Ala  
                   50                                  55                                  60  
 Asp Pro Glu Gly Cys Phe Pro Val Ile Leu Gly His Glu Gly Ala Gly  
                   65                                  70                                  75                                  80  
 Ile Val Glu Ser Val Gly Glu Gly Val Thr Lys Leu Lys Ala Gly Asp  
                                   85                                  90                                  95  
 Thr Val Ile Pro Leu Tyr Ile Pro Gln Cys Gly Glu Cys Lys Phe Cys  
                                   100                                  105                                  110  
 Leu Asn Pro Lys Thr Asn Leu Cys Gln Lys Ile Arg Val Thr Gln Gly  
                   115                                  120                                  125  
 Lys Gly Leu Met Pro Asp Gly Thr Ser Arg Phe Thr Cys Lys Gly Lys  
                   130                                  135                                  140  
 Thr Ile Leu His Tyr Met Gly Thr Ser Thr Phe Ser Glu Tyr Thr Val  
                   145                                  150                                  155                                  160  
 Val Ala Asp Ile Ser Val Ala Lys Ile Asp Pro Leu Ala Pro Leu Asp  
                                   165                                  170                                  175  
 Lys Val Cys Leu Leu Gly Cys Gly Ile Ser Thr Gly Tyr Gly Ala Ala  
                   180                                  185                                  190  
 Val Asn Thr Ala Lys Leu Glu Pro Gly Ser Val Cys Ala Val Phe Gly  
                   195                                  200                                  205  
 Leu Gly Gly Val Gly Leu Ala Val Ile Met Gly Cys Lys Val Ala Gly  
                   210                                  215                                  220  
 Ala Ser Arg Ile Ile Gly Val Asp Ile Asn Lys Asp Lys Phe Ala Arg  
                   225                                  230                                  235                                  240  
 Ala Lys Glu Phe Gly Ala Thr Glu Cys Ile Asn Pro Gln Asp Phe Ser  
                                   245                                  250                                  255  
 Lys Pro Ile Gln Glu Val Leu Ile Glu Met Thr Asp Gly Gly Val Asp  
                   260                                  265                                  270  
 Tyr Ser Phe Glu Cys Ile Gly Asn Val Lys Val Met Arg Ala Ala Leu  
                   275                                  280                                  285  
 Glu Ala Cys His Lys Gly Trp Gly Val Thr Xaa Val Val Gly Val Ala  
                   290                                  295                                  300

796

Ala Ser Gly Glu Glu Ile Ala Thr Arg Pro Phe Gln Leu Val Thr Gly  
 305 310 315 320

Arg Thr Trp Lys Gly Thr Ala Phe Gly Gly Trp Lys Ser Val Glu Ser  
 325 330 335

Val Pro Lys Leu Val Ser Glu Tyr Met Ser Lys Lys Ile Lys Val Asp  
 340 345 350

Glu Phe Val Thr His Asn Leu Ser Phe Asp Glu Ile Asn Lys Ala Phe  
 355 360 365

Glu Leu Met His Ser Gly Lys Ser Ile Arg Thr Val Val Lys Ile  
 370 375 380

&lt;210&gt; 851

&lt;211&gt; 154

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 851

Ala Arg Ala Pro Arg Ala Thr Leu Asn Gly Pro Gly Ala Arg Gly Arg  
 1 5 10 15

Val Gly Val Val Val Leu Arg Pro Arg Pro Arg Gly Leu Arg Phe Pro  
 20 25 30

Trp Cys Pro Gly Arg Pro Ala Ser Gly Ala Val Ser Tyr Glu Ser Ala  
 35 40 45

His Ala Ala Ser Val Arg Leu Thr Leu Arg Thr Met Glu Gly Gly Phe  
 50 55 60

Gly Ser Asp Phe Gly Gly Ser Gly Ser Gly Lys Leu Asp Pro Gly Leu  
 65 70 75 80

Ile Met Glu Gln Val Lys Val Gln Ile Ala Val Ala Asn Ala Gln Glu  
 85 90 95

Leu Leu Gln Arg Met Thr Asp Lys Cys Phe Arg Lys Cys Ile Gly Lys  
 100 105 110

Pro Gly Gly Ser Leu Asp Asn Ser Glu Gln Lys Cys Ile Ala Met Cys  
 115 120 125

Met Asp Arg Tyr Met Asp Ala Trp Asn Thr Val Ser Arg Ala Tyr Asn  
 130 135 140

Ser Arg Leu Gln Arg Glu Arg Ala Asn Met

797

145

150

&lt;210&gt; 852

&lt;211&gt; 396

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 852

Asp Ser Arg Val Asp Pro Arg Val Arg Ala Ile Ile Ala Lys Thr Phe  
 1 5 10 15

Lys Gly Arg Gly Ile Thr Gly Val Glu Asp Lys Glu Ser Trp His Gly  
 20 25 30

Lys Pro Leu Pro Lys Asn Met Ala Glu Gln Ile Ile Gln Glu Ile Tyr  
 35 40 45

Ser Gln Ile Gln Ser Lys Lys Lys Ile Leu Ala Thr Pro Pro Gln Glu  
 50 55 60

Asp Ala Pro Ser Val Asp Ile Ala Asn Ile Arg Met Pro Ser Leu Pro  
 65 70 75 80

Ser Tyr Lys Val Gly Asp Lys Ile Ala Thr Arg Lys Ala Tyr Gly Gln  
 85 90 95

Ala Leu Ala Lys Leu Gly His Ala Ser Asp Arg Ile Ile Ala Leu Asp  
 100 105 110

Gly Asp Thr Lys Asn Ser Thr Phe Ser Glu Ile Phe Lys Lys Glu His  
 115 120 125

Pro Asp Arg Phe Ile Glu Cys Tyr Ile Ala Glu Gln Asn Met Val Ser  
 130 135 140

Ile Ala Val Gly Cys Ala Thr Arg Asn Arg Thr Val Pro Phe Cys Ser  
 145 150 155 160

Thr Phe Ala Ala Phe Phe Thr Arg Ala Phe Asp Gln Ile Arg Met Ala  
 165 170 175

Ala Ile Ser Glu Ser Asn Ile Asn Leu Cys Gly Ser His Cys Gly Val  
 180 185 190

Ser Ile Gly Glu Asp Gly Pro Ser Gln Met Ala Leu Glu Asp Leu Ala  
 195 200 205

Met Phe Arg Ser Val Pro Thr Ser Thr Val Phe Tyr Pro Ser Asp Gly  
 210 215 220

798

Val Ala Thr Glu Lys Ala Val Glu Leu Ala Ala Asn Thr Lys Gly Ile  
 225 230 235 240

Cys Phe Ile Arg Thr Ser Arg Pro Glu Asn Ala Ile Ile Tyr Asn Asn  
 245 250 255

Asn Glu Asp Phe Gln Val Gly Gln Ala Lys Val Val Leu Lys Ser Lys  
 260 265 270

Asp Asp Gln Val Thr Val Ile Gly Ala Gly Val Thr Leu His Glu Ala  
 275 280 285

Leu Ala Ala Ala Glu Leu Leu Lys Lys Glu Lys Ile Asn Ile Arg Val  
 290 295 300

Leu Asp Pro Phe Thr Ile Lys Pro Leu Asp Arg Lys Leu Ile Leu Asp  
 305 310 315 320

Ser Ala Arg Ala Thr Lys Gly Arg Ile Leu Thr Val Glu Asp His Tyr  
 325 330 335

Tyr Glu Gly Gly Ile Gly Glu Ala Val Ser Ser Ala Val Val Gly Glu  
 340 345 350

Pro Gly Ile Thr Val Thr His Leu Ala Val Asn Arg Val Pro Arg Ser  
 355 360 365

Gly Lys Pro Ala Glu Leu Leu Lys Met Phe Gly Ile Asp Arg Asp Ala  
 370 375 380

Ile Ala Gln Ala Val Arg Gly Leu Ile Thr Lys Ala  
 385 390 395

<210> 853

<211> 302

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (228)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 853

Ser Arg Leu Gly Leu Gln Ser Cys Gly Leu Ser Thr Gln Ala Ile Thr  
 1 5 10 15

Leu Ser Glu Thr Ala Ala Ala Leu Asp Cys Ser Leu Pro Arg Leu His

799

20	25	30
Ala Arg Gln Ser Met Arg Val Thr Leu Ala Thr Ile Ala Trp Met Val		
35	40	45
Ser Phe Val Ser Asn Tyr Ser His Thr Ala Asn Ile Leu Pro Asp Ile		
50	55	60
Glu Asn Glu Asp Phe Ile Lys Asp Cys Val Arg Ile His Asn Lys Phe		
65	70	75
Arg Ser Glu Val Lys Pro Thr Ala Ser Asp Met Leu Tyr Met Thr Trp		
85	90	95
Asp Pro Ala Leu Ala Gln Ile Ala Lys Ala Trp Ala Ser Asn Cys Gln		
100	105	110
Phe Ser His Asn Thr Arg Leu Lys Pro Pro His Lys Leu His Pro Asn		
115	120	125
Phe Thr Ser Leu Gly Glu Asn Ile Trp Thr Gly Ser Val Pro Ile Phe		
130	135	140
Ser Val Ser Ser Ala Ile Thr Asn Trp Tyr Asp Glu Ile Gln Asp Tyr		
145	150	155
Asp Phe Lys Thr Arg Ile Cys Lys Lys Val Cys Gly His Tyr Thr Gln		
165	170	175
Val Val Trp Ala Asp Ser Tyr Lys Val Gly Cys Ala Val Gln Phe Cys		
180	185	190
Pro Lys Val Ser Gly Phe Asp Ala Leu Ser Asn Gly Ala His Phe Ile		
195	200	205
Cys Asn Tyr Gly Pro Gly Gly Asn Tyr Pro Thr Trp Pro Tyr Lys Arg		
210	215	220
Gly Ala Thr Xaa Ser Ala Cys Pro Asn Asn Asp Lys Cys Leu Asp Asn		
225	230	235
Leu Cys Val Asn Arg Gln Arg Asp Gln Val Lys Arg Tyr Tyr Ser Val		
245	250	255
Val Tyr Pro Gly Trp Pro Ile Tyr Pro Arg Asn Arg Tyr Thr Ser Leu		
260	265	270
Phe Leu Ile Val Asn Ser Val Ile Leu Ile Leu Ser Val Ile Ile Thr		
275	280	285
Ile Leu Val Gln His Lys Tyr Pro Asn Leu Val Leu Leu Asp		

800

290

295

300

&lt;210&gt; 854

&lt;211&gt; 237

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (235)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 854

Val Pro Ala Ser Phe Ala Ala Ala Ser Ala Val Leu Ser Ala Val Phe  
 1 5 10 15

Pro Gln Glu Pro Ala Tyr Phe Leu Asn Met Glu Ser Val Val Arg Arg  
 20 25 30

Cys Pro Phe Leu Ser Arg Val Pro Gln Ala Phe Leu Gln Lys Ala Gly  
 35 40 45

Lys Ser Leu Leu Phe Tyr Ala Gln Asn Cys Pro Lys Met Met Glu Val  
 50 55 60

Gly Ala Lys Pro Ala Pro Arg Ala Leu Ser Thr Ala Ala Val His Tyr  
 65 70 75 80

Gln Gln Ile Lys Glu Thr Pro Pro Ala Ser Glu Lys Asp Lys Thr Ala  
 85 90 95

Lys Ala Lys Val Gln Gln Thr Pro Asp Gly Ser Gln Gln Ser Pro Asp  
 100 105 110

Gly Thr Gln Leu Pro Ser Gly His Pro Leu Pro Ala Thr Ser Gln Gly  
 115 120 125

Thr Ala Ser Lys Cys Pro Phe Leu Ala Ala Gln Met Asn Gln Arg Gly  
 130 135 140

Ser Ser Val Phe Cys Lys Ala Ser Leu Glu Leu Gln Glu Asp Val Gln  
 145 150 155 160

Glu Met Asn Ala Val Arg Lys Glu Val Ala Glu Thr Ser Ala Gly Pro  
 165 170 175

Ser Val Val Ser Val Lys Thr Asp Gly Gly Asp Pro Ser Gly Leu Leu  
 180 185 190

801

Lys Asn Phe Gln Asp Ile Met Gln Lys Gln Arg Pro Glu Arg Val Ser  
 195 200 205

His Leu Leu Gln Asp Asn Leu Pro Lys Ser Val Ser Thr Phe Gln Tyr  
 210 215 220

Asp Arg Phe Phe Glu Lys Lys Ile Asp Glu Xaa Lys Glu  
 225 230 235

<210> 855

<211> 272

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (202)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 855

Thr Pro Gly Ile Phe Thr Glu Gln Ser Met Ile Thr Phe Leu Pro Leu  
 1 5 10 15

Leu Leu Gly Leu Ser Leu Gly Cys Thr Gly Ala Gly Gly Phe Val Ala  
 20 25 30

His Val Glu Ser Thr Cys Leu Leu Asp Asp Ala Gly Thr Pro Lys Asp  
 35 40 45

Phe Thr Tyr Cys Ile Ser Phe Asn Lys Asp Leu Leu Thr Cys Trp Asp  
 50 55 60

Pro Glu Glu Asn Lys Met Ala Pro Cys Glu Phe Gly Val Leu Asn Ser  
 65 70 75 80

Leu Ala Asn Val Leu Ser Gln His Leu Asn Gln Lys Asp Thr Leu Met  
 85 90 95

Gln Arg Leu Arg Asn Gly Leu Gln Asn Cys Ala Thr His Thr Gln Pro  
 100 105 110

Phe Trp Gly Ser Leu Thr Asn Arg Thr Arg Pro Pro Ser Val Gln Val  
 115 120 125

Ala Lys Thr Thr Pro Phe Asn Thr Arg Glu Pro Val Met Leu Ala Cys  
 130 135 140

Tyr Val Trp Gly Phe Tyr Pro Ala Glu Val Thr Ile Thr Trp Arg Lys  
 145 150 155 160



802

Asn Gly Lys Leu Val Met Pro His Ser Ser Ala His Lys Thr Ala Gln  
                     165                    170                    175  
 Pro Asn Gly Asp Trp Thr Tyr Gln Thr Leu Ser His Leu Ala Leu Thr  
                     180                    185                    190  
 Pro Ser Tyr Gly Asp Thr Tyr Thr Cys Xaa Val Glu His Ile Gly Ala  
                     195                    200                    205  
 Pro Glu Pro Ile Leu Arg Asp Trp Thr Pro Gly Leu Ser Pro Met Gln  
                     210                    215                    220  
 Thr Leu Lys Val Ser Val Ser Ala Val Thr Leu Gly Leu Gly Leu Ile  
 225                    230                    235                    240  
 Ile Phe Ser Leu Gly Val Ile Ser Trp Arg Arg Ala Gly His Ser Ser  
                     245                    250                    255  
 Tyr Thr Pro Leu Pro Gly Ser Asn Tyr Ser Glu Gly Trp His Ile Ser  
                     260                    265                    270

&lt;210&gt; 856

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 856

Val Val Ala Arg Phe Ile Arg Ile Tyr Pro Leu Thr Trp Asn Gly Ser  
     1                    5                    10                    15  
 Leu Cys Met Arg Leu Glu Val Leu Gly Cys Ser Val Ala Pro Val Tyr  
           20                    25                    30  
 Ser Tyr Tyr Ala Gln Asn Glu Val Val Ala Thr Asp Asp Leu Asp Phe  
           35                    40                    45  
 Arg His His Ser Tyr Lys Asp Met Arg Gln Leu Met Lys Val Val Asn  
           50                    55                    60  
 Glu Glu Cys Pro Thr Ile Thr Arg Thr Tyr Ser Leu Gly Lys Ser Ser  
           65                    70                    75                    80  
 Arg Gly Leu Lys Ile Tyr Ala Met Glu Ile Ser Asp Asn Pro Gly Glu  
                     85                    90                    95

803

His Glu Leu Gly Glu Pro Glu Phe Arg Tyr Thr Ala Gly Ile His Gly  
 100 105 110

Asn Glu Val Leu Gly Arg Glu Leu Leu Leu Leu Met Gln Tyr Leu  
 115 120 125

Cys Arg Glu Tyr Arg Asp Gly Asn Pro Arg Val Arg Ser Trp Cys Arg  
 130 135 140

Thr His Ala Ser Thr Trp Cys Pro His  
 145 150

<210> 857

<211> 258

<212> PRT

<213> Homo sapiens

<400> 857

Cys Leu Ser Gln Lys Ala Val Arg Ala Pro Arg Phe Leu Arg Gly Leu  
 1 5 10 15

Pro Ser Gly Arg Val Asn Cys Phe Leu Gln Ala Gly His Gly Ala Ser  
 20 25 30

Arg Ser Gln Gly Ser Gly Leu Cys Gln Met Leu Lys Glu Gly Ala Lys  
 35 40 45

His Phe Ser Gly Leu Glu Glu Ala Val Tyr Arg Asn Ile Gln Ala Cys  
 50 55 60

Lys Glu Leu Ala Gln Thr Thr Arg Thr Ala Tyr Gly Pro Asn Gly Met  
 65 70 75 80

Asn Lys Met Val Ile Asn His Leu Glu Lys Leu Phe Val Thr Asn Asp  
 85 90 95

Ala Ala Thr Ile Leu Arg Glu Leu Glu Val Gln His Pro Ala Ala Lys  
 100 105 110

Met Ile Val Met Ala Ser His Met Gln Glu Gln Glu Val Gly Asp Gly  
 115 120 125

Thr Asn Phe Val Leu Val Phe Ala Gly Ala Leu Leu Glu Leu Ala Glu  
 130 135 140

Glu Leu Leu Arg Ile Gly Leu Ser Val Ser Glu Val Ile Glu Gly Tyr  
 145 150 155 160

Glu Ile Ala Cys Arg Lys Ala His Glu Ile Leu Pro Asn Leu Val Cys

804

165                      170                      175  
 Cys Ser Ala Lys Asn Leu Arg Asp Ile Asp Glu Val Ser Ser Leu Leu  
                     180                      185                      190  
 Arg Thr Ser Ile Met Ser Lys Gln Tyr Gly Asn Glu Val Phe Leu Ala  
                     195                      200                      205  
 Lys Leu Ile Ala Gln Ala Cys Val Ser Ile Phe Pro Asp Ser Gly His  
                     210                      215                      220  
 Phe Asn Val Asp Asn Ile Arg Val Cys Lys Ile Leu Gly Ser Gly Ile  
 225                      230                      235                      240  
 Ser Ser Ser Ser Val Leu His Gly Met Val Phe Lys Lys Glu Thr Glu  
                     245                      250                      255  
 Val Met

&lt;210&gt; 858

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (135)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 858

Pro Asp Ser Leu Pro Pro Pro Ser Pro Arg Leu Pro Ala Xaa Gly Pro  
 1                      5                      10                      15

Glu Phe Pro Gly Arg Pro Thr Arg Pro Glu Arg Ser Pro Ser Leu Gly  
                     20                      25                      30

Ile Pro Lys Cys Phe His Ser Val Ile Arg Thr Glu His Arg Gly Leu  
 35                      40                      45

Thr Met Glu Phe Gly Leu Ser Trp Ile Phe Leu Ala Ala Ile Leu Lys  
 50                      55                      60

Gly Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val

805

65                      70                      75                      80  
 Lys Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr  
                                  85                      90                      95  
 Phe Ser Asn Ala Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly  
                                  100                      105                      110  
 Leu Glu Trp Val Gly Arg Ile Lys Ser Lys Thr Asp Gly Gly Thr Thr  
                                  115                      120                      125  
 Asp Tyr Ala Ala Pro Val Xaa Arg Gln Ile His His Leu Lys Arg  
                                  130                      135                      140

&lt;210&gt; 859

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (132)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (133)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 859

Val Thr Met Ala Gln Gln Ala Ala Asp Lys Tyr Leu Tyr Val Asp Lys  
   1                      5                      10                      15

Asn Phe Ile Asn Asn Pro Leu Ala Gln Ala Asp Trp Ala Ala Lys Lys  
                                  20                      25                      30

Leu Val Trp Val Pro Ser Asp Lys Ser Gly Phe Glu Pro Ala Ser Leu  
                                  35                      40                      45

Lys Glu Glu Val Gly Glu Glu Ala Ile Val Glu Leu Val Glu Asn Gly  
                                  50                      55                      60

Lys Lys Val Lys Val Asn Lys Asp Asp Ile Gln Lys Met Asn Pro Pro  
   65                      70                      75                      80

Lys Phe Ser Lys Val Glu Asp Met Ala Glu Leu Thr Cys Leu Asn Glu  
                                  85                      90                      95

Ala Ser Val Leu His Asn Leu Lys Glu Arg Tyr Tyr Ser Gly Leu Ile

806

100	105	110
Tyr Val Ser Gly Cys Arg Gly Thr Pro Gln Ala Gly Ser Glu Gly Ser		
115	120	125
Glu Val Gly Xaa Xaa Ala Gly		
130	135	

&lt;210&gt; 860

&lt;211&gt; 52

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 860

Ala Xaa Leu Ile Lys Thr Arg Val Leu Ile Tyr Asn Lys Ser Asn Phe
1 5 10 15

Ser Leu Ser Leu Gly Thr Ser Asn Cys Thr Pro Gln Ile Thr Asp Thr
20 25 30

Ser Glu Phe Phe Met Val Lys Lys Ala Pro Thr Leu Thr Tyr Lys Cys
35 40 45

Gly Pro Arg Asn
50

&lt;210&gt; 861

&lt;211&gt; 321

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 861

Ala His Gly Val Thr Ser Ala Pro Asp Asn Arg Pro Ala Leu Gly Ser
1 5 10 15

Thr Xaa Pro Pro Val His Asn Val Thr Ser Ala Ser Gly Ser Ala Ser
20 25 30

Gly	Ser	Ala	Ser	Thr	Leu	Val	His	Asn	Gly	Thr	Ser	Ala	Arg	Ala	Thr	
35			40					45								
Thr	Thr	Pro	Ala	Ser	Lys	Ser	Thr	Pro	Phe	Ser	Ile	Pro	Ser	His	His	
50			55					60								
Ser	Asp	Thr	Pro	Thr	Thr	Leu	Ala	Ser	His	Ser	Thr	Lys	Thr	Asp	Ala	
65		70					75								80	
Ser	Ser	Thr	His	His	Ser	Thr	Val	Pro	Pro	Leu	Thr	Ser	Ser	Asn	His	
85				90					95							
Ser	Thr	Ser	Pro	Gln	Leu	Ser	Thr	Gly	Val	Ser	Phe	Phe	Phe	Leu	Ser	
100			105					110								
Phe	His	Ile	Ser	Asn	Leu	Gln	Phe	Asn	Ser	Ser	Leu	Glu	Asp	Pro	Ser	
115		120					125									
Thr	Asp	Tyr	Tyr	Gln	Glu	Leu	Gln	Arg	Asp	Ile	Ser	Glu	Met	Phe	Leu	
130		135					140									
Gln	Ile	Tyr	Lys	Gln	Gly	Gly	Phe	Leu	Gly	Leu	Ser	Asn	Ile	Lys	Phe	
145		150					155								160	
Arg	Pro	Gly	Ser	Val	Val	Val	Gln	Leu	Thr	Leu	Ala	Phe	Arg	Glu	Gly	
165			170					175								
Thr	Ile	Asn	Val	His	Asp	Val	Glu	Thr	Gln	Phe	Asn	Gln	Tyr	Lys	Thr	
180			185					190								
Glu	Ala	Ala	Ser	Arg	Tyr	Asn	Leu	Thr	Ile	Ser	Asp	Val	Ser	Val	Ser	
195		200					205									
Asp	Val	Pro	Phe	Pro	Phe	Ser	Ala	Gln	Ser	Gly	Ala	Gly	Val	Pro	Gly	
210		215					220									
Trp	Gly	Ile	Ala	Leu	Leu	Val	Leu	Val	Cys	Val	Leu	Val	Ala	Leu	Ala	
225		230					235								240	
Ile	Val	Tyr	Leu	Ile	Ala	Leu	Ala	Val	Cys	Gln	Cys	Arg	Arg	Lys	Asn	
245				250					255							
Tyr	Gly	Gln	Leu	Asp	Ile	Phe	Pro	Ala	Arg	Asp	Thr	Tyr	His	Pro	Met	
260			265					270								
Ser	Glu	Tyr	Pro	Thr	Tyr	His	Thr	His	Gly	Arg	Tyr	Val	Pro	Pro	Ser	
275		280					285									
Ser	Thr	Asp	Arg	Ser	Pro	Tyr	Glu	Lys	Val	Ser	Ala	Gly	Asn	Gly	Gly	
290		295					300									

808

Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Thr Ser Ala Asn  
 305 310 315 320

Leu

<210> 862

<211> 327

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (307)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 862

Phe Gly Thr Ser Leu Thr Gln Val Leu Leu Gly Ala Gly Glu Asn Thr  
 1 5 10 15

Lys Thr Asn Leu Glu Ser Ile Leu Ser Tyr Pro Lys Asp Phe Thr Cys  
 20 25 30

Val His Gln Ala Leu Lys Gly Phe Thr Thr Lys Gly Val Thr Ser Val  
 35 40 45

Ser Gln Ile Phe His Ser Pro Asp Leu Ala Ile Arg Asp Thr Phe Val  
 50 55 60

Asn Ala Ser Arg Thr Leu Tyr Ser Ser Ser Pro Arg Val Leu Ser Asn  
 65 70 75 80

Asn Ser Asp Ala Asn Leu Glu Leu Ile Asn Thr Trp Val Ala Lys Asn  
 85 90 95

Thr Asn Asn Lys Ile Ser Arg Leu Leu Asp Ser Leu Pro Ser Asp Thr  
 100 105 110

Arg Leu Val Leu Leu Asn Ala Ile Tyr Leu Ser Ala Lys Trp Lys Thr  
 115 120 125

Thr Phe Asp Pro Lys Lys Thr Arg Met Glu Pro Phe His Phe Lys Asn  
 130 135 140

Ser Val Ile Lys Val Pro Met Met Asn Ser Lys Lys Tyr Pro Val Ala  
 145 150 155 160

His Phe Ile Asp Gln Thr Leu Lys Ala Lys Val Gly Gln Leu Gln Leu

809

165								170				175			
Ser	His	Asn	Leu	Ser	Leu	Val	Ile	Leu	Val	Pro	Gln	Asn	Leu	Lys	His
180				185				190							
Arg	Leu	Glu	Asp	Met	Glu	Gln	Ala	Leu	Ser	Pro	Ser	Val	Phe	Lys	Ala
195				200				205							
Ile	Met	Glu	Lys	Leu	Glu	Met	Ser	Lys	Phe	Gln	Pro	Thr	Leu	Leu	Thr
210				215				220							
Leu	Pro	Arg	Ile	Lys	Val	Thr	Thr	Ser	Gln	Asp	Met	Leu	Ser	Ile	Met
225				230				235				240			
Glu	Lys	Leu	Glu	Phe	Phe	Asp	Phe	Ser	Tyr	Asp	Leu	Asn	Leu	Cys	Gly
245				250				255							
Leu	Thr	Glu	Asp	Pro	Asp	Leu	Gln	Val	Ser	Ala	Met	Gln	His	Gln	Thr
260				265				270							
Val	Leu	Glu	Leu	Thr	Glu	Thr	Gly	Val	Glu	Ala	Ala	Ala	Ala	Ser	Ala
275				280				285							
Ile	Ser	Val	Ala	Arg	Thr	Leu	Leu	Val	Phe	Glu	Val	Gln	Gln	Pro	Phe
290				295				300							
Leu	Phe	Xaa	Leu	Trp	Asp	Gln	Gln	His	Lys	Phe	Pro	Val	Phe	Met	Gly
305				310				315				320			
Arg	Val	Tyr	Asp	Pro	Arg	Ala									
325															

<210> 863

<211> 86

<212> PRT

<213> Homo sapiens

<400> 863

Tyr	Tyr	Ile	Val	His	Leu	Lys	Leu	Thr	Glu	Arg	Val	Asn	Leu	Lys	Cys
1				5					10					15	
Ser	His	His	Thr	Asn	Pro	Lys	Val	Thr	Met	Phe	Ser	Pro	His	Lys	Pro
			20					25					30		
Lys	Gly	Asn	Tyr	Val	Leu	Ile	Ser	Leu	Ile	Val	Val	Thr	Ile	Ser	Gln
		35				40						45			
Cys	Ile	His	Leu	Pro	Lys	His	Tyr	Val	Val	Tyr	Leu	Glu	Tyr	Ile	Ile
50					55					60					



810

Leu Phe Ile Asn Tyr Thr Ser Ile Lys Leu Lys Glu Gly Ile Thr Asn  
 65 70 75 80

Ser His Lys Ile Gln Ile  
 85

&lt;210&gt; 864

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 864

Leu Thr Gln Gln Gln Gln Pro Ala Thr Gly Pro Gln Pro Ser Leu Gly  
 1 5 10 15

Val Ser Phe Gly Thr Pro Phe Gly Ser Gly Ile Gly Thr Gly Leu Gln  
 20 25 30

Ser Ser Gly Leu Gly Ser Ser Asn Leu Gly Gly Phe Gly Thr Ser Ser  
 35 40 45

Gly Phe Gly Cys Ser Thr Thr Gly Ala Ser Thr Phe Gly Phe Gly Thr  
 50 55 60

Thr Asn Lys Pro Ser Gly Ser Leu Ser Ala Gly Phe Gly Ser Ser Ser  
 65 70 75 80

Thr Ser Gly Phe Asn Phe Ser Asn Pro Gly Ile Thr Ala Ser Ala Gly  
 85 90 95

Leu Thr Phe Gly Val Ser Asn Pro Ala Ser Ala Gly Phe Gly Thr Gly  
 100 105 110

Gly Gln Leu Leu Gln Leu Lys Lys Pro Pro Ala Gly Asn Lys Arg Gly  
 115 120 125

Lys Arg  
 130

&lt;210&gt; 865

&lt;211&gt; 78

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 865

Ser Glu Trp Lys Ile Lys Gly Pro Ser Ser Pro Leu Ala Ser Leu Pro

811

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      1             5             10             15
Gly Arg Arg His Gly Gly Ser Ser Ala Thr Gly Ala Cys Gly Glu Ala
      20             25             30
Met Ala Ala Ala Glu Gly Ser Ser Gly Pro Ala Gly Leu Thr Leu Gly
      35             40             45
Arg Ser Phe Ser Asn Tyr Arg Pro Phe Glu Pro Gln Ala Leu Gly Leu
      50             55             60
Ser Pro Ser Trp Arg Leu Thr Gly Phe Ser Gly Met Lys Gly
      65             70             75

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&lt;210&gt; 866

&lt;211&gt; 529

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (517)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 866

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Pro Pro Pro Glu Pro Arg Ala Xaa Met Ala Glu Asn Pro Ser Leu Glu
  1             5             10             15
Asn His Arg Ile Lys Ser Phe Lys Asn Lys Gly Arg Asp Val Glu Thr
      20             25             30
Met Arg Arg His Arg Asn Glu Val Thr Val Glu Leu Arg Lys Asn Lys
      35             40             45
Arg Asp Glu His Leu Leu Lys Lys Arg Asn Val Pro Gln Glu Glu Ser
      50             55             60
Leu Glu Asp Ser Asp Val Asp Ala Asp Phe Lys Ala Gln Asn Val Thr
      65             70             75             80
Leu Glu Ala Ile Leu Gln Asn Ala Thr Ser Asp Asn Pro Val Val Gln
      85             90             95
Leu Ser Ala Val Gln Ala Ala Arg Lys Leu Leu Ser Ser Asp Arg Asn

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812

100	105	110
Pro Pro Ile Asp Asp Leu Ile Lys Ser Gly Ile Leu Pro Ile Leu Val		
115	120	125
Lys Cys Leu Glu Arg Asp Asp Asn Pro Ser Leu Gln Phe Glu Ala Ala		
130	135	140
Trp Ala Leu Thr Asn Ile Ala Ser Gly Thr Ser Ala Gln Thr Gln Ala		
145	150	155
Val Val Gln Ser Asn Ala Val Pro Leu Phe Leu Arg Leu Leu Arg Ser		
	165	170
Pro His Gln Asn Val Cys Glu Gln Ala Val Trp Ala Leu Gly Asn Ile		
	180	185
Ile Gly Asp Gly Pro Gln Cys Arg Asp Tyr Val Ile Ser Leu Gly Val		
	195	200
Val Lys Pro Leu Leu Ser Phe Ile Ser Pro Ser Ile Pro Ile Thr Phe		
	210	215
Leu Arg Asn Val Thr Trp Val Ile Val Asn Leu Cys Arg Asn Lys Asp		
225	230	235
Pro Pro Pro Pro Met Glu Thr Val Gln Glu Ile Leu Pro Ala Leu Cys		
	245	250
Val Leu Ile Tyr His Thr Asp Ile Asn Ile Leu Val Asp Thr Val Trp		
	260	265
Ala Leu Ser Tyr Leu Thr Asp Gly Gly Asn Glu Gln Ile Gln Met Val		
	275	280
Ile Asp Ser Gly Val Val Pro Phe Leu Val Pro Leu Leu Ser His Gln		
	290	295
Glu Val Lys Val Gln Thr Ala Ala Leu Arg Ala Val Gly Asn Ile Val		
305	310	315
Thr Gly Thr Asp Glu Gln Thr Gln Val Val Leu Asn Cys Asp Val Leu		
	325	330
Ser His Phe Pro Asn Leu Leu Ser His Pro Lys Glu Lys Ile Asn Lys		
	340	345
Glu Ala Val Trp Phe Leu Ser Asn Ile Thr Ala Gly Asn Gln Gln Gln		
	355	360
Val Gln Ala Val Ile Asp Ala Gly Leu Ile Pro Met Ile Ile His Gln		

813

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370          375          380
Leu Ala Lys Gly Asp Phe Gly Thr Gln Lys Glu Ala Ala Trp Ala Ile
385          390          395          400

Ser Asn Leu Thr Ile Ser Gly Arg Lys Asp Gln Val Glu Tyr Leu Val
          405          410          415

Gln Gln Asn Val Ile Pro Pro Phe Cys Asn Leu Leu Ser Val Lys Asp
          420          425          430

Ser Gln Val Val Gln Val Val Leu Asp Gly Leu Lys Asn Ile Leu Ile
          435          440          445

Met Ala Gly Asp Glu Ala Ser Thr Ile Ala Glu Ile Ile Glu Glu Cys
          450          455          460

Gly Gly Leu Glu Lys Ile Glu Val Leu Gln Gln His Glu Asn Glu Asp
465          470          475          480

Ile Tyr Lys Leu Ala Phe Glu Ile Ile Asp Gln Tyr Phe Ser Gly Asp
          485          490          495

Asp Ile Asp Glu Asp Pro Cys Leu Ile Pro Glu Ala Thr Gln Gly Gly
          500          505          510

Thr Tyr Asn Phe Xaa Pro Thr Ala Asn Leu Gln Thr Lys Glu Phe Asn
          515          520          525

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Phe

&lt;210&gt; 867

&lt;211&gt; 237

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 867

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Arg Pro Gly Pro Val Arg Arg Arg Gly Lys Val Glu Leu Ile Lys Phe
 1          5          10          15

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Val Arg Val Gln Trp Arg Arg Pro Gln Val Glu Trp Arg Arg Arg Arg
          20          25          30

```

```

Trp Gly Pro Gly Pro Gly Ala Ser Met Ala Gly Ser Glu Glu Leu Gly
          35          40          45

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```

Leu Arg Glu Asp Thr Leu Arg Val Leu Ala Ala Phe Leu Arg Arg Gly
          50          55          60

```

Glu Ala Ala Gly Ser Pro Val Pro Thr Pro Pro Arg Ser Pro Ala Gln  
65 70 75 80

Glu Glu Pro Thr Asp Phe Leu Ser Arg Leu Arg Arg Cys Leu Pro Cys  
85 90 95

Ser Leu Gly Arg Gly Ala Ala Pro Ser Glu Ser Pro Arg Pro Cys Ser  
100 105 110

Leu Pro Ile Arg Pro Cys Tyr Gly Leu Glu Pro Gly Pro Ala Thr Pro  
115 120 125

Asp Phe Tyr Ala Leu Val Ala Gln Arg Leu Glu Gln Leu Val Gln Glu  
130 135 140

Gln Leu Lys Ser Pro Pro Ser Pro Glu Leu Gln Gly Pro Pro Ser Thr  
145 150 155 160

Glu Lys Glu Ala Ile Leu Arg Arg Leu Val Ala Leu Leu Glu Glu Glu  
165 170 175

Ala Glu Val Ile Asn Gln Lys Leu Ala Ser Asp Pro Ala Leu Arg Thr  
180 185 190

Ser Trp Ser Ala Cys Pro Pro Thr Leu Ser Pro Ala Trp Trp Ser Cys  
195 200 205

Ser Val Ala Gly Met Thr Ala Leu Ala Gln Ala Glu His Ala Pro Gly  
210 215 220

Pro Arg Leu Leu Pro Arg Ser Pro Trp Pro Ala Trp Pro  
225                      230                      235

<210> 868

<211> 196

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (6)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

**<221> SITE**

<222> (9)

<223> Xaa equals any of the naturally occurring L-amino acids

815

&lt;400&gt; 868

Leu Ser Val Ser Ala Xaa Ala Ala Xaa Val Ala Ala Ala Ala Ile His  
 1 5 10 15

Ser Asp Ser Ala Ala Ala Pro Gly Gly Gly Gly Ala Ala Arg Asp Phe  
 20 25 30

Phe Phe Phe Gln Thr Asp Arg Gly Ala Ala Ala Asp Met Ser Thr Pro  
 35 40 45

Ala Arg Arg Arg Leu Met Arg Asp Phe Lys Arg Leu Gln Glu Asp Pro  
 50 55 60

Pro Val Gly Val Ser Gly Ala Pro Ser Glu Asn Asn Ile Met Gln Trp  
 65 70 75 80

Asn Ala Val Ile Phe Gly Pro Glu Gly Thr Pro Phe Glu Asp Gly Thr  
 85 90 95

Phe Lys Leu Val Ile Glu Phe Ser Glu Glu Tyr Pro Asn Lys Pro Pro  
 100 105 110

Thr Val Arg Phe Leu Ser Lys Met Phe His Pro Asn Val Tyr Ala Asp  
 115 120 125

Gly Ser Ile Cys Leu Asp Ile Leu Gln Asn Arg Trp Ser Pro Thr Tyr  
 130 135 140

Asp Val Ser Ser Ile Leu Thr Ser Ile Gln Ser Leu Leu Asp Glu Pro  
 145 150 155 160

Asn Pro Asn Ser Pro Ala Asn Ser Gln Ala Ala Gln Leu Tyr Gln Glu  
 165 170 175

Asn Lys Arg Glu Tyr Glu Lys Arg Val Ser Ala Ile Val Glu Gln Ser  
 180 185 190

Trp Asn Asp Ser  
 195

&lt;210&gt; 869

&lt;211&gt; 544

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

816

**<220>**

<221> SITE

<222> (9)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 869

Ala	Asp	Ala	Trp	Val	Ala	Xaa	Ala	Xaa	Ala	Ser	Ser	Gly	Leu	Val	Val
1				5				10						15	
Ala	Arg	Pro	Thr	Ser	Ala	Val	Pro	Ala	Glu	Pro	Arg	Pro	Phe	Arg	Pro
			20					25					30		
Ser	Pro	Pro	His	Leu	Ala	Ala	Met	Arg	Leu	Arg	Arg	Leu	Ala	Leu	Phe
		35					40					45			
Pro	Gly	Val	Ala	Leu	Leu	Leu	Ala	Ala	Ala	Arg	Leu	Ala	Ala	Ala	Ser
	50					55					60				
Asp	Val	Leu	Glu	Leu	Thr	Asp	Asp	Asn	Phe	Glu	Ser	Arg	Ile	Ser	Asp
65					70					75					80
Thr	Gly	Ser	Ala	Gly	Leu	Met	Leu	Val	Glu	Phe	Phe	Ala	Pro	Trp	Cys
				85					90					95	
Gly	His	Cys	Lys	Arg	Leu	Ala	Pro	Glu	Tyr	Glu	Ala	Ala	Ala	Thr	Arg
			100					105					110		
Leu	Lys	Gly	Ile	Val	Pro	Leu	Ala	Lys	Val	Asp	Cys	Thr	Ala	Asn	Thr
		115					120					125			
Asn	Thr	Cys	Asn	Lys	Tyr	Gly	Val	Ser	Gly	Tyr	Pro	Thr	Leu	Lys	Ile
	130					135					140				
Phe	Arg	Asp	Gly	Glu	Glu	Ala	Gly	Ala	Tyr	Asp	Gly	Pro	Arg	Thr	Ala
145				150						155					160
Asp	Gly	Ile	Val	Ser	His	Leu	Lys	Lys	Gln	Ala	Gly	Pro	Ala	Ser	Val
				165					170					175	
Pro	Leu	Arg	Thr	Glu	Glu	Glu	Phe	Lys	Lys	Phe	Ile	Ser	Asp	Lys	Asp
			180					185					190		
Ala	Ser	Ile	Val	Gly	Phe	Phe	Asp	Asp	Ser	Phe	Ser	Glu	Ala	His	Ser
		195					200					205			
Glu	Phe	Leu	Lys	Ala	Ala	Ser	Asn	Leu	Arg	Asp	Asn	Tyr	Arg	Phe	Ala
	210					215					220				
His	Thr	Asn	Val	Glu	Ser	Leu	Val	Asn	Glu	Tyr	Asp	Asp	Asn	Gly	Glu
225				230						235					240

Gly Ile Ile Leu Phe Arg Pro Ser His Leu Thr Asn Lys Phe Glu Asp  
 245 250 255  
 Lys Thr Val Ala Tyr Thr Glu Gln Lys Met Thr Ser Gly Lys Ile Lys  
 260 265 270  
 Lys Phe Ile Gln Glu Asn Ile Phe Gly Ile Cys Pro His Met Thr Glu  
 275 280 285  
 Asp Asn Lys Asp Leu Ile Gln Gly Lys Asp Leu Leu Ile Ala Tyr Tyr  
 290 295 300  
 Asp Val Asp Tyr Glu Lys Asn Ala Lys Gly Ser Asn Tyr Trp Arg Asn  
 305 310 315 320  
 Arg Val Met Met Val Ala Lys Lys Phe Leu Asp Ala Gly His Lys Leu  
 325 330 335  
 Asn Phe Ala Val Ala Ser Arg Lys Thr Phe Ser His Glu Leu Ser Asp  
 340 345 350  
 Phe Gly Leu Glu Ser Thr Ala Gly Glu Ile Pro Val Val Ala Ile Arg  
 355 360 365  
 Thr Ala Lys Gly Glu Lys Phe Val Met Gln Glu Glu Phe Ser Arg Asp  
 370 375 380  
 Gly Lys Ala Leu Glu Arg Phe Leu Gln Asp Tyr Phe Asp Gly Asn Leu  
 385 390 395 400  
 Lys Arg Tyr Leu Lys Ser Glu Pro Ile Pro Glu Ser Asn Asp Gly Pro  
 405 410 415  
 Val Lys Val Val Val Ala Glu Asn Phe Asp Glu Ile Val Asn Asn Glu  
 420 425 430  
 Asn Lys Asp Val Leu Ile Glu Phe Tyr Ala Pro Trp Cys Gly His Cys  
 435 440 445  
 Lys Asn Leu Glu Pro Lys Tyr Lys Glu Leu Gly Glu Lys Leu Ser Lys  
 450 455 460  
 Asp Pro Asn Ile Val Ile Ala Lys Met Asp Ala Thr Ala Asn Asp Val  
 465 470 475 480  
 Pro Ser Pro Tyr Glu Val Arg Gly Phe Pro Thr Ile Tyr Phe Ser Pro  
 485 490 495  
 Ala Asn Lys Lys Leu Asn Pro Lys Lys Tyr Glu Gly Gly Arg Glu Leu  
 500 505 510



818

Ser Asp Phe Ile Ser Tyr Leu Gln Arg Glu Ala Thr Asn Pro Pro Val  
 515 520 525

Ile Gln Glu Glu Lys Pro Lys Lys Lys Lys Lys Ala Gln Glu Asp Leu  
 530 535 540

<210> 870

<211> 111

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 870

Arg Arg Xaa Ala Ile Phe Thr Cys Glu Val Pro Gly Val Tyr Tyr Phe  
 1 5 10 15

Xaa Tyr His Val His Cys Lys Gly Gly Asn Val Trp Val Ala Leu Phe  
 20 25 30

Lys Asn Asn Glu Pro Val Met Tyr Thr Tyr Asp Glu Tyr Lys Lys Gly  
 35 40 45

Phe Leu Asp Gln Ala Ser Gly Ser Ala Val Leu Leu Leu Arg Pro Gly  
 50 55 60

Asp Arg Cys Ser Ser Arg Cys Pro Gln Asn Arg Leu Gln Asp Cys Met  
 65 70 75 80

Pro Gly Ser Met Ser Thr Pro Pro Phe Gln Asp Ile Tyr Cys Ile Pro  
 85 90 95

Cys Lys Asn Lys Lys Thr Lys Asn Lys Glu Lys Lys Glu Ile Leu  
 100 105 110

819

&lt;210&gt; 871

&lt;211&gt; 124

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 871

Gly Lys Thr Glu Val Asn Tyr Thr Gln Leu Val Asp Leu His Ala Arg  
 1 5 10 15

Tyr Ala Glu Cys Gly Leu Arg Ile Leu Ala Phe Pro Cys Asn Gln Phe  
 20 25 30

Gly Lys Gln Glu Pro Gly Ser Asn Glu Glu Ile Lys Glu Phe Ala Ala  
 35 40 45

Gly Tyr Asn Val Lys Phe Asp Met Phe Ser Lys Ile Cys Val Asn Gly  
 50 55 60

Asp Asp Ala His Pro Leu Trp Lys Trp Met Lys Ile Gln Pro Lys Gly  
 65 70 75 80

Lys Gly Ile Leu Gly Asn Ala Ile Lys Trp Asn Phe Thr Lys Phe Leu  
 85 90 95

Ile Asp Lys Asn Gly Cys Val Val Lys Arg Tyr Gly Pro Met Glu Glu  
 100 105 110

Pro Leu Val Ile Glu Lys Asp Leu Pro His Tyr Phe  
 115 120

&lt;210&gt; 872

&lt;211&gt; 35

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 872

Ser Gln His Phe Gly Arg Pro Arg Gln Ala Glu His Leu Lys Glu Phe  
 1 5 10 15

Lys Thr Ser Val Ala Asn Val Val Asn Pro Val Ser Thr Lys Asn Thr  
 20 25 30

Lys Ile Val  
 35

&lt;210&gt; 873

&lt;211&gt; 420

820

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 873

```

Val Cys Leu Gln Leu Cys Gln Ser Thr Val Ser Cys Pro Leu Gly Tyr
  1           5           10           15

Leu Ala Ser Thr Ala Thr Asn Asp Cys Gly Cys Thr Thr Thr Thr Cys
      20           25           30

Leu Pro Asp Lys Val Cys Val His Arg Ser Thr Ile Tyr Pro Val Gly
      35           40           45

Gln Phe Trp Glu Glu Gly Cys Asp Val Cys Thr Cys Thr Asp Met Glu
      50           55           60

Asp Ala Val Met Gly Leu Arg Val Ala Gln Cys Ser Gln Lys Pro Cys
      65           70           75           80

Glu Asp Ser Cys Arg Ser Gly Phe Thr Tyr Val Leu His Glu Gly Glu
      85           90           95

Cys Cys Gly Arg Cys Leu Pro Ser Ala Cys Glu Val Val Thr Gly Ser
      100          105          110

Pro Arg Gly Asp Ser Gln Ser Ser Trp Lys Ser Val Gly Ser Gln Trp
      115          120          125

Ala Ser Pro Glu Asn Pro Cys Leu Ile Asn Glu Cys Val Arg Val Lys
      130          135          140

Glu Glu Val Phe Ile Gln Gln Arg Asn Val Ser Cys Pro Gln Leu Glu
      145          150          155          160

Val Pro Val Cys Pro Ser Gly Phe Gln Leu Ser Cys Lys Thr Ser Ala
      165          170          175

Cys Cys Pro Ser Cys Arg Cys Glu Arg Met Glu Ala Cys Met Leu Asn
      180          185          190

Gly Thr Val Ile Gly Pro Gly Lys Thr Val Met Ile Asp Val Cys Thr
      195          200          205

Thr Cys Arg Cys Met Val Gln Val Gly Val Ile Ser Gly Phe Lys Leu
      210          215          220

Glu Cys Arg Lys Thr Thr Cys Asn Pro Cys Pro Leu Gly Tyr Lys Glu
      225          230          235          240

Glu Asn Asn Thr Gly Glu Cys Cys Gly Arg Cys Leu Pro Thr Ala Cys
      245          250          255

```

821

Thr Ile Gln Leu Arg Gly Gly Gln Ile Met Thr Leu Lys Arg Asp Glu  
                   260                                  265                                  270  
 Thr Leu Gln Asp Gly Cys Asp Thr His Phe Cys Lys Val Asn Glu Arg  
                   275                                  280                                  285  
 Gly Glu Tyr Phe Trp Glu Lys Arg Val Thr Gly Cys Pro Pro Phe Asp  
                   290                                  295                                  300  
 Glu His Lys Cys Leu Ala Glu Gly Gly Lys Ile Met Lys Ile Pro Gly  
 305                                  310                                  315                                  320  
 Thr Cys Cys Asp Thr Cys Glu Glu Pro Glu Cys Asn Asp Ile Thr Ala  
                                   325                                  330                                  335  
 Arg Leu Gln Tyr Val Lys Val Gly Ser Cys Lys Ser Glu Val Glu Val  
                   340                                  345                                  350  
 Asp Ile His Tyr Cys Gln Gly Lys Cys Ala Ser Lys Ala Met Tyr Ser  
                   355                                  360                                  365  
 Ile Asp Ile Asn Asp Val Gln Asp Gln Cys Ser Cys Cys Ser Pro Thr  
                   370                                  375                                  380  
 Arg Thr Glu Pro Met Gln Val Ala Leu His Cys Thr Asn Gly Ser Val  
 385                                  390                                  395                                  400  
 Val Tyr His Glu Val Leu Asn Ala Met Glu Cys Lys Cys Ser Pro Arg  
                   405                                  410                                  415  
 Lys Cys Ser Lys  
                   420

&lt;210&gt; 874

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (90)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

822

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (143)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 874

Arg Gln Val Pro His Glu Arg Ala Val Arg Asp Gly Arg Gly Gly Gly  
 1 5 10 15

Arg Ser Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser  
 20 25 30

Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln  
 35 40 45

Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala  
 50 55 60

Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu Glu Ala Arg Thr  
 65 70 75 80

Asp Ser Pro Phe Pro Asn Ser Cys Ala Xaa Gly Met Ala Asn Gly Asp  
 85 90 95

Ala Pro Cys Met Gly Ala Xaa Lys Arg Gly Gly Cys Gly Gly Tyr Ala  
 100 105 110

Gln Trp Thr Arg Tyr Thr Cys Gln Arg Pro Ser Ala Arg Ser Phe Arg  
 115 120 125

Phe Leu Pro Phe Leu Ser Arg His Val Arg Arg Leu Ser Pro Xaa Ser  
 130 135 140

Ser Lys Ser Val Gly Ser Leu  
 145 150

&lt;210&gt; 875

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 875

Ala Leu Asn Leu Asn Ser Gln Leu Asn Ile Pro Lys Asp Thr Ser Gln  
 1 5 10 15

Leu Lys Lys His Ile Thr Leu Leu Cys Asp Arg Leu Ser Lys Gly Gly  
 20 25 30

Arg Leu Cys Leu Ser Thr Asp Ala Ala Ala Pro Gln Thr Met Val Met

823

```

          35              40              45
Pro Gly Gly Cys Thr Thr Ile Pro Glu Ser Asp Leu Glu Glu Arg Ser
   50              55              60

Val Glu Gln Asp Ser Thr Glu Leu Phe Thr Asn His Arg His Leu Thr
   65              70              75              80

Ala Glu Thr Pro Arg Pro Val Ser Pro Leu Gln Gly Val Ser Glu
          85              90              95

```

&lt;210&gt; 876

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 876

```

Thr Lys Lys Ala Leu Glu Xaa Ser Asn Xaa Arg Phe Ala Ala Xaa Phe
  1              5              10              15

```

```

Phe Arg Thr Xaa Trp Asn Pro Pro Gly Ala Phe Lys Glu Phe Gly Thr
      20              25              30

```

```

Ser Leu Leu Arg Arg Arg Arg Gly Ser Gly Ala Asn Met Pro Val Ala
   35              40              45

```

```

Arg Ser Trp Val Cys Arg Lys Thr Tyr Val Thr Pro Arg Arg Pro Phe
   50              55              60

```

824

Glu Lys Ser Arg Leu Asp Gln Glu Leu Lys Leu Ile Gly Glu Tyr Gly  
 65 70 75 80  
 Leu Arg Asn Lys Arg Glu Val Trp Arg Val Lys Phe Thr Leu Ala Lys  
 85 90 95  
 Ile Arg Lys Ala Ala Arg Glu Leu Leu Thr Leu Asp Glu Lys Asp Pro  
 100 105 110  
 Arg Arg Leu Phe Glu Gly Asn Ala Leu Leu Arg Arg Leu Val Arg Ile  
 115 120 125  
 Gly Val Leu Asp Glu Gly Lys Met Lys Leu Asp Tyr Ile Leu Gly Leu  
 130 135 140  
 Lys Ile Glu Asp Phe Leu Glu Arg Arg Leu Gln Thr Gln Val Phe Lys  
 145 150 155 160  
 Leu Gly Leu Ala Lys Ser Ile His His Ala Arg Val Leu Ile Arg Gln  
 165 170 175  
 Arg His Ile Arg Val Arg Lys Gln Val Val Asn Ile Pro Ser Phe Ile  
 180 185 190  
 Val Arg Leu Asp Ser Gln Lys His Ile Asp Phe Ser Leu Arg Ser Pro  
 195 200 205  
 Tyr Gly Gly Gly Arg Pro Gly Arg Val Lys Arg Lys Asn Ala Lys Lys  
 210 215 220  
 Gly Gln Gly Gly Ala Gly Ala Gly Asp Asp Glu Glu Glu Asp  
 225 230 235

&lt;210&gt; 877

&lt;211&gt; 79

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 877

Ala Gly Ile Arg His Glu Pro Ser Ala Ala Ala Met Ser Ser Gly Ala  
 1 5 10 15  
 Ser Ala Ser Ala Leu Gln Arg Leu Val Glu Gln Leu Lys Leu Glu Ala  
 20 25 30  
 Gly Val Glu Arg Ile Lys Val Ser Gln Ala Ala Ala Glu Leu Gln Gln  
 35 40 45  
 Tyr Cys Met Gln Asn Ala Cys Lys Asp Ala Leu Leu Val Gly Val Pro

825

50                      55                      60  
 Ala Gly Ser Asn Pro Phe Arg Glu Pro Arg Ser Cys Ala Leu Leu  
 65                      70                      75  
  
 <210> 878  
 <211> 136  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 878  
 Ile Ala Ile Met Asn Asp Thr Val Thr Ile Arg Thr Arg Lys Phe Met  
 1                      5                      10                      15  
 Thr Asn Arg Leu Leu Gln Arg Lys Gln Met Val Ile Asp Val Leu His  
 20                      25                      30  
 Pro Gly Lys Ala Thr Val Pro Lys Thr Glu Ile Arg Glu Lys Leu Ala  
 35                      40                      45  
 Lys Met Tyr Lys Thr Thr Pro Asp Val Ile Phe Val Phe Gly Phe Arg  
 50                      55                      60  
 Thr His Phe Gly Gly Gly Lys Thr Thr Gly Phe Gly Met Ile Tyr Asp  
 65                      70                      75                      80  
 Ser Leu Asp Tyr Ala Lys Lys Asn Glu Pro Lys His Arg Leu Ala Arg  
 85                      90                      95  
 His Gly Leu Tyr Glu Lys Lys Lys Thr Ser Arg Lys Gln Arg Lys Glu  
 100                      105                      110  
 Arg Lys Asn Arg Met Lys Lys Val Arg Gly Thr Ala Lys Ala Asn Val  
 115                      120                      125  
 Gly Ala Gly Lys Lys Pro Lys Glu  
 130                      135

<210> 879  
 <211> 141  
 <212> PRT  
 <213> Homo sapiens

<400> 879  
 Gly Cys Val Gly Val Arg Pro Ser Leu His Pro Ala Thr Ser Thr Ala  
 1                      5                      10                      15



826

Ser Gly Ser Ala Ser Pro Thr Leu Ala Arg Ala Met Ala Ser Val Ser  
20 25 30

Glu Leu Ala Cys Ile Tyr Ser Ala Leu Ile Leu His Asp Asp Glu Val  
35 40 45

Thr Val Thr Glu Asp Lys Ile Asn Ala Leu Ile Lys Ala Ala Gly Val  
50 55 60

Asn Val Glu Pro Phe Trp Pro Gly Leu Phe Ala Lys Ala Leu Ala Asn  
65 70 75 80

Val Asn Ile Gly Ser Leu Ile Cys Asn Val Gly Ala Gly Gly Pro Ala  
85 90 95

Pro Ala Ala Gly Ala Ala Pro Ala Gly Gly Pro Ala Pro Ser Thr Ala  
100 105 110

Ala Ala Pro Ala Glu Glu Lys Lys Val Glu Ala Lys Lys Glu Glu Ser  
115 120 125

Glu Glu Ser Asp Asp Asp Met Gly Phe Gly Leu Phe Asp  
130 135 140

&lt;210&gt; 880

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (128)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (130)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

827

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 880

Ser Ala Gly Ala His Ala His Gly Ala Arg Glu Leu Ala Xaa Phe Leu  
1 5 10 15

Thr Pro Xaa Pro Gly Ala Glu Ala Lys Glu Val Glu Glu Thr Ile Glu  
20 25 30

Gly Met Leu Leu Arg Leu Glu Glu Phe Cys Ser Leu Ala Asp Leu Ile  
35 40 45

Arg Ser Asp Thr Ser Gln Ile Leu Glu Glu Asn Ile Pro Val Leu Lys  
50 55 60

Ala Lys Leu Thr Glu Met Arg Gly Ile Tyr Ala Lys Val Asp Arg Leu  
65 70 75 80

Glu Ala Phe Val Lys Met Val Gly His His Val Ala Phe Leu Glu Ala  
85 90 95

Asp Val Leu Gln Ala Glu Arg Asp His Gly Ala Phe Pro Gln Ala Leu  
100 105 110

Arg Arg Trp Leu Gly Ser Ala Gly Ser Pro Pro Ser Gly Thr Ser Xaa  
115 120 125

Leu Xaa Xaa Cys Pro  
130

&lt;210&gt; 881

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (124)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

<221> SITE

<222> (136)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (171)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 881

Ile Glu Glu Pro Arg Asp Thr Arg Leu Gln Val Cys Ser Xaa Val His  
1 5 10 15

Ile Trp Cys Leu Asp Lys Phe Lys Met Arg Lys His Arg His Leu Pro  
20 25 30

Leu Val Ala Val Phe Cys Leu Phe Leu Ser Gly Phe Pro Thr Thr His  
35 40 45

Ala Gln Gln Gln Gln Ala Val Ile Glu Val Asn Lys Arg Asp Ile Val  
50 55 60

Phe Leu Val Asp Gly Ser Ser Ala Leu Gly Leu Ala Asn Phe Asn Ala  
65 70 75 80

Ile Arg Asp Phe Ile Ala Lys Val Ile Gln Arg Leu Glu Ile Gly Gln  
85 90 95

Asp Leu Ile Gln Val Ala Val Ala Gln Tyr Ala Asp Thr Val Arg Pro  
100 105 110

Glu Phe Tyr Phe Asn Thr His Pro Thr Lys Arg Xaa Val Ile Thr Ala  
115 120 125

Val Arg Lys Met Lys Pro Leu Xaa Gly Ser Ala Leu Tyr Thr Gly Ser  
130 135 140

Ala Leu Asp Phe Val Arg Asn Asn Leu Phe Thr Ser Ser Ala Gly Tyr  
145 150 155 160

Arg Ala Ala Glu Gly Ile Pro Lys Leu Leu Xaa Leu Ile Thr Gly Gly  
165 170 175

Lys Ser Leu Asp Glu Ile Ser Gln Pro Ala Gln Glu Leu Lys Arg Ser  
180 185 190

Ser Ile Met Ala Phe Ala Ile Gly Asn Lys Gly Ala Asp Gln Ala Glu  
195 200 205

Leu Glu Glu Ile Ala Phe Asp Ser Ser Leu Val Phe Ile Pro Ala Glu  
210 215 220

Phe Arg Ala Ala Pro Leu Gln Gly Met Leu Pro Gly Leu Leu Ala Pro  
225 230 235 240

Leu Arg Thr Leu Ser Gly Thr Pro Glu Val His Ser Asn Lys Arg Asp  
245 250 255

Ile Ile Phe Leu  
260

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<210> 882
<211> 149
<212> PRT
<213> Homo sapiens
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<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids
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<220>
<221> SITE
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<223> Xaa equals any of the naturally occurring L-amino acids
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<220>
<221> SITE
<222> (19)
<223> Xaa equals any of the naturally occurring L-amino acids
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830

&lt;400&gt; 882

Xaa Xaa Glu Ser Glu Xaa Ser Phe Xaa Cys Arg Lys Xaa Ile Ile Xaa  
 1 5 10 15

Phe Leu Xaa Tyr Lys Arg Val Val Phe Leu Lys Gln Leu Ala Ser Gly  
 20 25 30

Leu Leu Leu Val Thr Gly Pro Leu Val Leu Asn Arg Val Pro Leu Arg  
 35 40 45

Arg Thr His Gln Lys Phe Val Ile Ala Thr Ser Thr Lys Ile Asp Ile  
 50 55 60

Ser Asn Val Lys Ile Pro Lys His Leu Thr Asp Ala Tyr Phe Lys Lys  
 65 70 75 80

Lys Lys Leu Arg Lys Pro Arg His Gln Glu Gly Glu Ile Phe Asp Thr  
 85 90 95

Glu Lys Glu Lys Tyr Glu Ile Thr Glu Gln Arg Lys Ile Asp Gln Lys  
 100 105 110

Ala Val Asp Ser Gln Ile Leu Pro Lys Ile Lys Ala Ile Pro Gln Leu  
 115 120 125

Gln Gly Tyr Leu Arg Ser Val Phe Ala Leu Thr Asn Gly Ile Tyr Pro  
 130 135 140

His Lys Leu Val Phe  
 145

&lt;210&gt; 883

&lt;211&gt; 256

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 883

Trp Lys Ser Val Val Val Leu Ala Val Ser Ala Gly Ala Gly Ser Ala  
 1 5 10 15

His Pro Arg Gln Asn Lys Tyr Ser Val Leu Leu Pro Thr Tyr Asn Glu  
 20 25 30

Arg Glu Asn Leu Pro Leu Ile Val Trp Leu Leu Val Lys Ser Phe Ser  
 35 40 45

Glu Ser Gly Ile Asn Tyr Glu Ile Ile Ile Ile Asp Asp Gly Ser Pro  
 50 55 60

831

Asp Gly Thr Arg Asp Val Ala Glu Gln Leu Glu Lys Ile Tyr Gly Ser  
65 70 75 80

Asp Arg Ile Leu Leu Arg Pro Arg Glu Lys Lys Leu Gly Leu Gly Thr  
85 90 95

Ala Tyr Ile His Gly Met Lys His Ala Thr Gly Asn Tyr Ile Ile Ile  
100 105 110

Met Asp Ala Asp Leu Ser His His Pro Lys Phe Ile Pro Glu Phe Ile  
115 120 125

Arg Lys Gln Lys Glu Gly Asn Phe Asp Ile Val Ser Gly Thr Arg Tyr  
130 135 140

Lys Gly Asn Gly Gly Val Tyr Gly Trp Asp Leu Lys Arg Lys Ile Ile  
145 150 155 160

Ser Arg Gly Ala Asn Phe Leu Thr Gln Ile Leu Leu Arg Pro Gly Ala  
165 170 175

Ser Asp Leu Thr Gly Ser Phe Arg Leu Tyr Arg Lys Glu Val Leu Glu  
180 185 190

Lys Leu Ile Glu Lys Cys Val Ser Lys Gly Tyr Val Phe Gln Met Glu  
195 200 205

Met Ile Val Arg Ala Arg Gln Leu Asn Tyr Thr Ile Gly Glu Val Pro  
210 215 220

Ile Ser Phe Val Asp Arg Val Tyr Gly Glu Ser Lys Leu Gly Gly Asn  
225 230 235 240

Glu Ile Val Ser Phe Leu Lys Gly Leu Leu Thr Leu Phe Ala Thr Thr  
245 250 255

&lt;210&gt; 884

&lt;211&gt; 449

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 884

Gly Gly Ser Trp Cys Arg Ser Ser Pro Gly Arg Asp Gly Ser Pro Gly  
1 5 10 15

Ala Lys Gly Asp Arg Gly Glu Thr Gly Pro Ala Gly Pro Pro Gly Ala  
                   20                  25                  30

Pro Gly Ala Pro Gly Ala Pro Gly Pro Val Gly Pro Ala Gly Lys Ser  
                   35                  40                  45

Gly Asp Arg Gly Glu Thr Gly Pro Ala Gly Pro Ala Gly Pro Val Gly  
                   50                  55                  60

Pro Val Gly Ala Arg Gly Pro Ala Gly Pro Gln Gly Pro Arg Gly Asp  
                   65                  70                  75                  80

Lys Gly Glu Thr Gly Glu Gln Gly Asp Arg Gly Ile Lys Gly His Arg  
                                   85                  90                  95

Gly Phe Ser Gly Leu Gln Gly Pro Pro Gly Pro Pro Gly Ser Pro Gly  
                   100                  105                  110

Glu Gln Gly Pro Ser Gly Ala Ser Gly Pro Ala Gly Pro Arg Gly Pro  
                   115                  120                  125

Pro Gly Ser Ala Gly Ala Pro Gly Lys Asp Gly Leu Asn Gly Leu Pro  
                   130                  135                  140

Gly Pro Ile Gly Pro Pro Gly Pro Arg Gly Arg Thr Gly Asp Ala Gly  
                   145                  150                  155                  160

Pro Val Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro  
                   165                  170                  175

Pro Ser Ala Gly Phe Asp Phe Ser Phe Leu Pro Gln Pro Pro Gln Glu  
                   180                  185                  190

Lys Ala His Asp Gly Gly Arg Tyr Tyr Arg Ala Asp Asp Ala Asn Val  
                   195                  200                  205

Val Arg Asp Arg Asp Leu Glu Val Asp Thr Thr Leu Lys Ser Leu Ser  
                   210                  215                  220

Gln Gln Ile Glu Asn Ile Arg Ser Pro Glu Gly Ser Arg Lys Asn Pro  
                   225                  230                  235                  240

Ala Arg Thr Cys Arg Asp Leu Lys Met Cys His Ser Asp Trp Lys Ser  
                   245                  250                  255

Gly Glu Tyr Trp Ile Asp Pro Asn Gln Gly Cys Asn Leu Asp Ala Ile  
                   260                  265                  270

Lys Val Phe Cys Asn Met Glu Thr Gly Glu Thr Cys Val Tyr Pro Thr  
                   275                  280                  285

833

Gln Pro Ser Val Ala Gln Lys Asn Trp Tyr Ile Ser Lys Asn Pro Lys  
 290 295 300  
 Asp Lys Arg His Val Trp Phe Gly Glu Ser Met Thr Asp Gly Phe Gln  
 305 310 315 320  
 Phe Glu Tyr Gly Gly Gln Gly Ser Asp Pro Ala Asp Val Ala Ile Gln  
 325 330 335  
 Leu Thr Phe Leu Arg Leu Met Ser Thr Glu Ala Ser Gln Asn Ile Thr  
 340 345 350  
 Tyr His Cys Lys Asn Ser Val Ala Tyr Met Asp Gln Gln Thr Gly Asn  
 355 360 365  
 Leu Lys Lys Ala Leu Leu Leu Gln Gly Ser Asn Glu Ile Glu Ile Arg  
 370 375 380  
 Ala Glu Gly Asn Ser Arg Phe Thr Tyr Ser Val Thr Val Asp Gly Cys  
 385 390 395 400  
 Thr Ser His Thr Gly Ala Trp Gly Lys Thr Val Ile Glu Tyr Lys Thr  
 405 410 415  
 Thr Lys Thr Ser Arg Leu Pro Ile Ile Asp Val Ala Pro Leu Asp Val  
 420 425 430  
 Gly Ala Pro Asp Gln Glu Phe Gly Phe Asp Val Gly Pro Val Cys Phe  
 435 440 445  
 Leu

&lt;210&gt; 885

&lt;211&gt; 64

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 885

Gly Lys Leu Val Thr Leu Gln Val Pro Val Arg Asn Ser Arg Val Asp  
 1 5 10 15  
 Pro Arg Val Arg Trp Gly Phe Thr Lys Phe Asn Ala Asp Glu Phe Glu  
 20 25 30  
 Asp Met Val Ala Glu Lys Arg Leu Ile Pro Asp Gly Cys Gly Val Lys  
 35 40 45  
 Tyr Ile Pro Ser Arg Gly Pro Leu Asp Lys Trp Arg Ala Leu His Ser



834

50

55

60

&lt;210&gt; 886

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 886

Thr Thr Leu Arg Ala Leu Ala Leu Asn Leu Trp Pro Pro Lys Ser Arg  
 1 5 10 15

Ser Leu Ile Ser Ser Trp Gln Ser Cys Gly Gln Glu Val Leu Lys Gly  
 20 25 30

Lys Thr His Ser Asp Asn Cys Ser Pro Ile Tyr Gln Pro Ser Ala Gly  
 35 40 45

Val Ser Asp Arg Gly Pro Leu Pro Pro Leu Glu Cys Ala Thr Tyr Glu  
 50 55 60

Glu Cys Pro Met Gly Lys Arg Arg Leu Ser Cys Pro Leu Ala Ala Cys  
 65 70 75 80

Ala Ser Ile Pro Gly Gln Lys Phe Pro Gln Glu Pro Leu Ala Leu Ala  
 85 90 95

Gln Ser His Cys Glu Arg Arg Trp Glu Pro Thr Pro Leu Gly Glu Gly  
 100 105 110

Ala Val Leu Leu Gly Thr Ser Gln His Gln Val Arg Ser Leu Lys Leu  
 115 120 125

Lys Asn Val Asn  
 130

&lt;210&gt; 887

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 887

Gly Leu Ser Ser Glu Ala Arg Glu Lys Ser Ser Glu Pro Gln Glu Arg  
 1 5 10 15

835

Ser Ser Glu Pro Trp Glu Arg Ser Ser Glu Pro Trp Glu Gly Leu Val  
                   20                  25                  30  
 Thr Phe Glu Asp Val Ala Val Glu Phe Thr Gln Glu Glu Trp Ala Leu  
                   35                  40                  45  
 Leu Asp Pro Ala Gln Arg Thr Leu Tyr Arg Asp Val Met Leu Glu Asn  
                   50                  55                  60  
 Cys Arg Thr Trp Pro His  
                   65                  70

<210> 888  
 <211> 373  
 <212> PRT  
 <213> Homo sapiens

<400> 888  
 Val Asp Pro Arg Val Arg Phe Arg Glu Glu Phe Leu Phe Ser Ser Leu  
                   1                  5                  10                  15  
 Gln Glu Gly Arg Asp Lys Asp Thr Phe Ser Lys Met Ala Met Val Ser  
                   20                  25                  30  
 Glu Phe Leu Lys Gln Ala Trp Phe Ile Glu Asn Glu Glu Gln Glu Tyr  
                   35                  40                  45  
 Val Gln Thr Val Lys Ser Ser Lys Gly Gly Pro Gly Ser Ala Val Ser  
                   50                  55                  60  
 Pro Tyr Pro Thr Phe Asn Pro Ser Ser Asp Val Ala Ala Leu His Lys  
                   65                  70                  75                  80  
 Ala Ile Met Val Lys Gly Val Asp Glu Ala Thr Ile Ile Asp Ile Leu  
                   85                  90                  95  
 Thr Lys Arg Asn Asn Ala Gln Arg Gln Gln Ile Lys Ala Ala Tyr Leu  
                   100                  105                  110  
 Gln Glu Thr Gly Lys Pro Leu Asp Glu Thr Leu Lys Lys Ala Leu Thr  
                   115                  120                  125  
 Gly His Leu Glu Glu Val Val Leu Ala Leu Leu Lys Thr Pro Ala Gln  
                   130                  135                  140  
 Phe Asp Ala Asp Glu Leu Arg Ala Ala Met Lys Gly Leu Gly Thr Asp  
                   145                  150                  155                  160  
 Glu Asp Thr Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Lys Glu Ile

836

	165		170		175
Arg Asp Ile Asn Arg Val Tyr Arg Glu Glu Leu Lys Arg Asp Leu Ala					
	180		185		190
Lys Asp Ile Thr Ser Asp Thr Ser Gly Asp Phe Arg Asn Ala Leu Leu					
	195		200		205
Ser Leu Ala Lys Gly Asp Arg Ser Glu Asp Phe Gly Val Asn Glu Asp					
	210		215		220
Leu Ala Asp Ser Asp Ala Arg Ala Leu Tyr Glu Ala Gly Glu Arg Arg					
	225		230		240
Lys Gly Thr Asp Val Asn Val Phe Asn Thr Ile Leu Thr Thr Arg Ser					
	245		250		255
Tyr Pro Gln Leu Arg Arg Val Phe Gln Lys Tyr Thr Lys Tyr Ser Lys					
	260		265		270
His Asp Met Asn Lys Val Leu Asp Leu Glu Leu Lys Gly Asp Ile Glu					
	275		280		285
Lys Cys Leu Thr Ala Ile Val Lys Cys Ala Thr Ser Lys Pro Ala Phe					
	290		295		300
Phe Ala Glu Lys Leu His Gln Ala Met Lys Gly Val Gly Thr Arg His					
	305		310		320
Lys Ala Leu Ile Arg Ile Met Val Ser Arg Ser Glu Ile Asp Met Asn					
	325		330		335
Asp Ile Lys Ala Phe Tyr Gln Lys Met Tyr Gly Ile Ser Leu Cys Gln					
	340		345		350
Ala Ile Leu Asp Glu Thr Lys Gly Asp Tyr Glu Lys Ile Leu Val Ala					
	355		360		365
Leu Cys Gly Gly Asn					
	370				

&lt;210&gt; 889

&lt;211&gt; 336

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (51)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (60)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (67)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (100)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (183)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 889

Gly	Arg	Lys	Lys	His	Leu	Xaa	Ala	Arg	Leu	Val	Thr	Glu	Met	Asp	Ser
1				5					10					15	

Lys	Tyr	Gln	Cys	Val	Lys	Leu	Asn	Asp	Gly	His	Phe	Met	Pro	Val	Leu
		20						25					30		

Gly	Phe	Gly	Thr	Tyr	Ala	Pro	Ala	Glu	Val	Pro	Lys	Ser	Lys	Ala	Leu
		35					40					45			

Glu	Ala	Xaa	Lys	Leu	Ala	Ile	Glu	Ala	Gly	Phe	Xaa	His	Ile	Asp	Ser
	50					55					60				

Ala	His	Xaa	Tyr	Asn	Asn	Glu	Glu	Gln	Val	Gly	Leu	Ala	Ile	Arg	Ser
65					70					75				80	

Lys	Ile	Ala	Asp	Gly	Ser	Val	Lys	Arg	Glu	Asp	Ile	Phe	Tyr	Thr	Ser
			85						90					95	

Lys	Leu	Trp	Xaa	Asn	Ser	His	Arg	Pro	Glu	Leu	Val	Arg	Pro	Ala	Leu
		100						105						110	

Glu	Arg	Ser	Leu	Lys	Asn	Leu	Gln	Leu	Asp	Tyr	Val	Asp	Leu	Tyr	Leu
		115				120						125			

838

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Ile His Phe Pro Val Ser Val Lys Pro Gly Glu Glu Val Ile Pro Lys
 130                      135                      140

Asp Glu Asn Gly Lys Ile Leu Phe Asp Thr Val Asp Leu Cys Ala Thr
145                      150                      155                      160

Trp Glu Ala Val Glu Lys Cys Lys Asp Ala Gly Leu Ala Lys Ser Ile
                      165                      170                      175

Gly Val Ser Asn Phe Asn Xaa Arg Gln Leu Glu Met Ile Leu Asn Lys
                      180                      185                      190

Pro Gly Leu Lys Tyr Lys Pro Val Cys Asn Gln Val Glu Cys His Pro
                      195                      200                      205

Tyr Phe Asn Gln Arg Lys Leu Leu Asp Phe Cys Lys Ser Lys Asp Ile
210                      215                      220

Val Leu Val Ala Tyr Ser Ala Leu Gly Ser His Arg Glu Glu Pro Trp
225                      230                      235                      240

Val Asp Pro Asn Ser Pro Val Leu Leu Glu Asp Pro Val Leu Cys Ala
                      245                      250                      255

Leu Ala Lys Lys His Lys Arg Thr Pro Ala Leu Ile Ala Leu Arg Tyr
260                      265                      270

Gln Leu Gln Arg Gly Val Val Val Leu Ala Lys Ser Tyr Asn Glu Gln
275                      280                      285

Arg Ile Arg Gln Asn Val Gln Val Phe Glu Phe Gln Leu Thr Ser Glu
290                      295                      300

Glu Met Lys Ala Ile Asp Gly Leu Asn Arg Asn Val Arg Tyr Leu Thr
305                      310                      315                      320

Leu Asp Ile Phe Ala Gly Pro Pro Asn Tyr Pro Phe Ser Asp Glu Tyr
                      325                      330                      335

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&lt;210&gt; 890

&lt;211&gt; 195

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 890

839

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Arg Ser Ser Glu Val Tyr Ala Gln Leu Cys Asn Val Ala Arg Ile Glu
 1           5           10           15

Ala Glu Arg Glu Ala Gly Val His Phe Arg Pro Gly Tyr Glu Tyr Gly
      20           25           30

Pro Gly Pro Asp Asp Leu His Tyr Ser Ile Tyr Gly Pro Asp Gly Ala
      35           40           45

Pro Phe Tyr Asn Tyr Leu Gly Pro Glu Asp Thr Val Pro Glu Pro Ala
      50           55           60

Phe Pro Asn Thr Ala Gly His Ser Ala Asp Arg Thr Pro Ile Leu Glu
      65           70           75           80

Ser Pro Leu Gln Pro Ser Glu Leu Gln Pro His Tyr Val Ala Ser His
      85           90           95

Pro Glu Pro Pro Ala Gly Phe Glu Gly Leu Gln Ala Glu Glu Cys Gly
      100          105          110

Ile Leu Asn Gly Cys Glu Asn Gly Arg Cys Val Arg Val Arg Glu Gly
      115          120          125

Tyr Thr Cys Asp Cys Phe Glu Gly Phe Gln Leu Asp Ala Ala His Met
      130          135          140

Ala Cys Val Asp Val Asn Glu Cys Asp Asp Leu Asn Gly Pro Ala Val
      145          150          155          160

Leu Cys Val His Gly Tyr Cys Glu Asn Thr Glu Gly Ser Tyr Arg Cys
      165          170          175

His Cys Ser Pro Gly Tyr Val Ala Glu Ala Gly Pro Pro His Cys Thr
      180          185          190

Ala Lys Glu
      195

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&lt;210&gt; 891

&lt;211&gt; 198

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

840

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (109)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 891

Ser Ala Gly Leu Thr Gly Arg Ile Ala Phe Ala Ala Ala Arg Pro Gln  
 1 5 10 15

Thr Phe Val Pro Gly Pro Ser Ser Pro Pro Pro Pro Pro Pro Arg  
 20 25 30

Pro Ala Glu Leu Ala Pro Ser Pro Pro Ala Asp Met Ser Glu Ser Lys  
 35 40 45

Ser Gly Pro Glu Tyr Ala Ser Phe Phe Ala Val Met Gly Ala Ser Ala  
 50 55 60

Ala Met Val Phe Ser Ala Leu Gly Ala Ala Tyr Gly Thr Ala Lys Ser  
 65 70 75 80

Gly Thr Gly Ile Ala Ala Met Ser Val Met Arg Pro Glu Gln Ile Met  
 85 90 95

Lys Ser Ile Ile Pro Val Val Met Ala Gly Ile Xaa Xaa Ile Tyr Gly  
 100 105 110

Leu Val Val Ala Val Leu Ile Ala Asn Ser Leu Asn Asp Asp Ile Ser  
 115 120 125

Leu Tyr Lys Ser Phe Leu Gln Leu Gly Ala Gly Leu Ser Val Gly Leu  
 130 135 140

Ser Gly Leu Ala Ala Gly Phe Ala Ile Gly Ile Val Gly Asp Ala Gly  
 145 150 155 160

Val Arg Gly Asn Ala Gln Gln Pro Arg Leu Phe Val Gly Met Ile Leu  
 165 170 175

Ile Leu Ile Phe Ala Glu Val Leu Gly Leu Tyr Gly Leu Ile Val Ala  
 180 185 190

Leu Ile Leu Ser Thr Lys  
 195

&lt;210&gt; 892

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

841

&lt;400&gt; 892

Asp Ala Trp Ala Pro Ser Glu Ser Arg Glu Ala Leu Leu Thr Pro Pro  
 1 5 10 15

Pro His Arg Arg His Thr Ala Ala Ala Ser Val Met Pro Lys His Glu  
 20 25 30

Phe Ser Val Asp Met Thr Cys Gly Gly Cys Ala Glu Ala Val Ser Arg  
 35 40 45

Val Leu Asn Lys Leu Gly Gly Val Lys Tyr Asp Ile Asp Leu Pro Asn  
 50 55 60

Lys Lys Val Cys Ile Glu Ser Glu His Ser Met Asp Thr Leu Leu Ala  
 65 70 75 80

Thr Leu Lys Lys Thr Gly Lys Thr Val Ser Tyr Leu Gly Leu Glu  
 85 90 95

&lt;210&gt; 893

&lt;211&gt; 123

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 893

Gly Glu His Pro Arg Gln Pro Ala Gly Asn Asn Ile Leu Ala Val Leu  
 1 5 10 15

Thr Cys Cys Gln Gln Ile His Arg Thr Trp Met Lys Phe Pro Phe Pro  
 20 25 30

Leu Val Ser Ser Cys Ser Thr Pro Leu Leu Asp Pro Lys Ser Leu Thr  
 35 40 45

Lys Ala Leu Asn Thr Val Lys Met Phe Tyr Ile Pro Phe His Leu Cys  
 50 55 60

Cys Phe Phe Asn Cys Ile Leu Pro Asp Val Leu Met Leu Ser Leu Met



842

65					70						75				80
Leu	Ile	Val	Ile	Pro	Val	Arg	Val	His	Phe	Ile	Phe	Met	Leu	Phe	Gln
				85					90					95	
Pro	Cys	Ile	Asn	Ile	His	Leu	Thr	Lys	Ile	Thr	Gln	Leu	Ile	Xaa	Lys
			100					105					110		
Lys	Lys	Lys	Asn	Xaa	Gly	Gly	Gly	Pro	Gly	Thr					
		115					120								

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<210> 894
<211> 172
<212> PRT
<213> Homo sapiens
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<400> 894
Gln Phe Val Tyr Cys Gly Lys Lys Ala Gln Leu Asn Ile Gly Asn Val
  1                      5                      10                      15

Leu Pro Val Gly Thr Met Pro Glu Gly Thr Ile Val Cys Cys Leu Glu
      20                      25                      30

Glu Lys Pro Gly Asp Arg Gly Lys Leu Ala Arg Ala Ser Gly Asn Tyr
      35                      40                      45

Ala Thr Val Ile Ser His Asn Pro Glu Thr Lys Lys Thr Arg Val Lys
      50                      55                      60

Leu Pro Ser Gly Ser Lys Lys Val Ile Ser Ser Ala Asn Arg Ala Val
      65                      70                      75                      80

Val Gly Val Val Ala Gly Gly Gly Arg Ile Asp Lys Pro Ile Leu Lys
      85                      90                      95

Ala Gly Arg Ala Tyr His Lys Tyr Lys Ala Lys Arg Asn Cys Trp Pro
      100                      105                      110

Arg Val Arg Gly Val Ala Met Asn Pro Val Glu His Pro Phe Gly Gly
      115                      120                      125

Gly Asn His Gln His Ile Gly Lys Pro Ser Thr Ile Arg Arg Asp Ala
      130                      135                      140

Pro Ala Gly Arg Lys Val Gly Leu Ile Ala Ala Arg Arg Thr Gly Arg
      145                      150                      155                      160

Leu Arg Gly Thr Lys Thr Val Gln Glu Lys Glu Asn
      165                      170

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843

&lt;210&gt; 895

&lt;211&gt; 171

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 895

Asn	Arg	Glu	Gly	Ser	Lys	Gly	Val	Glu	Thr	Arg	Arg	Val	Leu	Val	Gly
1				5					10					15	

Glu	Gln	Gln	Gln	Cys	Xaa	Asp	Ala	Lys	Ser	Gln	Gln	Lys	Glu	Gln	Met
			20					25					30		

Leu	Leu	Leu	Glu	Xaa	Lys	Ser	Ala	Ala	Tyr	Ser	Gln	Val	Leu	Leu	Arg
		35					40					45			

Cys	Leu	Thr	Leu	Leu	Gln	Arg	Leu	Leu	Gln	Glu	His	Arg	Leu	Lys	Thr
	50					55					60				

Gln	Ser	Glu	Leu	Asp	Arg	Ile	Asn	Ala	Gln	Tyr	Leu	Glu	Val	Lys	Cys
65					70					75					80

Gly	Ala	Met	Ile	Leu	Lys	Leu	Arg	Met	Glu	Glu	Leu	Lys	Ile	Leu	Ser
				85					90					95	

Asp	Thr	Tyr	Thr	Val	Glu	Lys	Val	Glu	Val	His	Arg	Leu	Ile	Arg	Asp
			100					105					110		

Arg	Leu	Glu	Gly	Ala	Ile	His	Leu	Gln	Glu	Gln	Asp	Met	Glu	Asn	Ser
	115						120					125			

Arg	Gln	Val	Leu	Asn	Ser	Tyr	Glu	Val	Leu	Gly	Glu	Glu	Phe	Asp	Arg
	130					135					140				

Leu	Val	Lys	Glu	Tyr	Thr	Val	Leu	Lys	Gln	Ala	Thr	Glu	Asn	Lys	Arg
145					150					155					160

Trp	Ala	Leu	Gln	Glu	Phe	Ser	Lys	Val	Tyr	Arg
		165						170		

844

&lt;210&gt; 896

&lt;211&gt; 99

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 896

Arg Glu Val Met Lys Leu Tyr Leu Phe Gln Trp Ala Leu Phe His Phe  
1 5 10 15

Thr Thr Val Pro Leu Phe Gly Ser Trp Ser Tyr Thr Leu Ile Phe Ser  
20 25 30

Ile Leu Leu Leu Asn Tyr Gln His Lys Ala Ile Tyr Leu Lys Asp Ser  
35 40 45

Val Tyr Pro Ala Ile Ala Leu Lys Ser Ser Arg Lys Arg Asn Pro Leu  
50 55 60

Thr Cys Ile Ser Phe Cys Arg Ala Ser Leu Phe Ser Phe Val Leu Cys  
65 70 75 80

Phe Leu Pro Phe Glu Ser Asp Ser Val Leu Val Arg Lys Thr Ser Trp  
85 90 95

Asp His Ser

&lt;210&gt; 897

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (255)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 897

Ala Pro Glu Phe Pro Gly Arg Pro Thr Arg Pro Pro Thr Arg Arg Pro  
1 5 10 15

Arg Val Arg Gly Arg Ser Gln Leu Ser Ala His Gly Pro Ala Ser Phe  
20 25 30

Lys Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly  
35 40 45

845

Asp His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr  
 50 55 60  
 Asn Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys  
 65 70 75 80  
 Thr Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg  
 85 90 95  
 Ser Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr  
 100 105 110  
 Lys Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu  
 115 120 125  
 Glu Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala  
 130 135 140  
 Ser Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser  
 145 150 155 160  
 Leu Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile  
 165 170 175  
 Asn Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile  
 180 185 190  
 Ile Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala  
 195 200 205  
 Lys Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile  
 210 215 220  
 Asp Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly  
 225 230 235 240  
 Thr Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Xaa Pro  
 245 250 255  
 Thr Ser Arg Lys Tyr Leu Ile Gly Thr Arg Val Thr Ala Leu Met Thr  
 260 265 270  
 Cys Trp Lys Ala Ser Gly Lys Arg Leu Lys Glu Thr Trp Lys Met Leu  
 275 280 285  
 Ser

846

<210> 898  
 <211> 232  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (205)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 898

Asn Pro Arg Gly Lys Val Ala Gly Phe Asp Leu Asp Gly Thr Leu Ile  
 1 5 10 15

Thr Thr Arg Ser Gly Lys Val Phe Pro Thr Gly Pro Ser Asp Trp Arg  
 20 25 30

Ile Leu Tyr Pro Glu Ile Pro Arg Lys Leu Arg Glu Leu Glu Ala Glu  
 35 40 45

Gly Tyr Lys Leu Val Ile Phe Thr Asn Gln Met Ser Ile Gly Arg Gly  
 50 55 60

Lys Leu Pro Ala Glu Glu Phe Lys Ala Lys Val Glu Ala Val Val Glu  
 65 70 75 80

Lys Leu Gly Val Pro Phe Gln Val Leu Val Ala Thr His Ala Gly Leu  
 85 90 95

Tyr Arg Lys Pro Val Thr Gly Met Trp Asp His Leu Gln Glu Gln Ala  
 100 105 110

Asn Asp Gly Thr Pro Ile Ser Ile Gly Asp Ser Ile Phe Val Gly Asp  
 115 120 125

Ala Ala Gly Arg Pro Ala Asn Trp Ala Pro Gly Arg Lys Lys Lys Asp  
 130 135 140

Phe Ser Cys Ala Asp Arg Leu Phe Ala Leu Asn Leu Gly Leu Pro Phe  
 145 150 155 160

Ala Thr Pro Glu Glu Phe Phe Leu Lys Trp Pro Ala Ala Gly Phe Glu  
 165 170 175

Leu Pro Ala Phe Asp Pro Arg Thr Val Ser Arg Ser Gly Pro Leu Cys  
 180 185 190

Leu Pro Glu Ser Arg Ala Leu Leu Ser Ala Thr Arg Xaa Trp Leu Ser  
 195 200 205

Gln Trp Asp Ser Leu Gly Pro Gly Ser Pro Pro Phe Ser Arg Ser Thr

847

210                      215                      220  
 Ser Cys Arg Pro Asp Met Ser Thr  
 225                      230  
  
 <210> 899  
 <211> 218  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 899  
 Leu Arg Val Ala Arg Pro Asp Ala Ala Arg Ala Ala Pro Leu Ala Pro  
   1                      5                      10                      15  
  
 Ala Ala Ala Met Lys Ala Val Val Gln Arg Val Thr Arg Ala Ser Val  
                     20                      25                      30  
  
 Thr Val Gly Gly Glu Gln Ile Ser Ala Ile Gly Arg Gly Ile Cys Val  
                     35                      40                      45  
  
 Leu Leu Gly Ile Ser Leu Glu Asp Thr Gln Lys Glu Leu Glu His Met  
   50                      55                      60  
  
 Val Arg Lys Ile Leu Asn Leu Arg Val Phe Glu Asp Glu Ser Gly Lys  
   65                      70                      75                      80  
  
 His Trp Ser Lys Ser Val Met Asp Lys Gln Tyr Glu Ile Leu Cys Val  
                     85                      90                      95  
  
 Ser Gln Phe Thr Leu Gln Cys Val Leu Lys Gly Asn Lys Pro Asp Phe  
                     100                      105                      110  
  
 His Leu Ala Met Pro Thr Glu Gln Ala Glu Gly Phe Tyr Asn Ser Phe  
                     115                      120                      125  
  
 Leu Glu Gln Leu Arg Lys Thr Tyr Arg Pro Glu Leu Ile Lys Asp Gly  
   130                      135                      140  
  
 Lys Phe Gly Ala Tyr Met Gln Val His Ile Gln Asn Asp Gly Pro Val  
   145                      150                      155                      160  
  
 Thr Ile Glu Leu Glu Ser Pro Ala Pro Gly Thr Ala Thr Ser Asp Pro  
                     165                      170                      175  
  
 Lys Gln Leu Ser Lys Leu Glu Lys Gln Gln Gln Arg Lys Glu Lys Thr  
                     180                      185                      190  
  
 Arg Ala Lys Gly Pro Ser Glu Phe Lys Gln Gly Lys Lys His Ser Pro  
                     195                      200                      205

848

Lys Arg Arg Pro Gln Cys Gln Gln Arg Gly  
 210 215

&lt;210&gt; 900

&lt;211&gt; 152

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 900

Ser Lys Arg Gly His Val Pro Trp Gly Leu Glu Glu Ile Leu Asp Val  
 1 5 10 15

Ile Glu Pro Ser Gln Phe Val Lys Ile Gln Glu Pro Leu Phe Lys Gln  
 20 25 30

Ile Ala Lys Cys Val Ser Ser Pro His Phe Gln Val Ala Glu Arg Ala  
 35 40 45

Leu Tyr Tyr Trp Asn Asn Glu Tyr Ile Met Ser Leu Ile Glu Glu Asn  
 50 55 60

Ser Asn Val Ile Leu Pro Ile Met Phe Ser Ser Leu Tyr Arg Ile Ser  
 65 70 75 80

Lys Glu His Trp Asn Pro Ala Ile Val Ala Leu Val Tyr Asn Val Leu  
 85 90 95

Lys Ala Phe Met Glu Met Asn Ser Thr Met Phe Asp Glu Leu Thr Ala  
 100 105 110

Thr Tyr Lys Ser Asp Arg Gln Arg Glu Lys Lys Lys Glu Lys Glu Arg  
 115 120 125

Glu Glu Leu Trp Lys Lys Leu Glu Asp Leu Glu Leu Lys Arg Gly Leu  
 130 135 140

Arg Arg Asp Gly Ile Ile Pro Thr  
 145 150

&lt;210&gt; 901

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 901

Gly Leu Arg Glu Ile Ser Gly Arg Leu Ala Glu Met Pro Ala Asp Ser

849

1	5	10	15
Gly Tyr Pro Ala Tyr Leu Gly Ala Arg Leu Ala Ser Phe Tyr Glu Arg	20	25	30
Ala Gly Arg Val Lys Cys Leu Gly Asn Pro Glu Arg Glu Gly Ser Val	35	40	45
Ser Ile Val Gly Ala Val Ser Pro Pro Gly Gly Asp Phe Ser Asp Pro	50	55	60
Val Thr Ser Ala Thr Leu Gly Ile Val Gln Val Phe Trp Gly Leu Asp	65	70	75
Lys Lys Leu Ala Gln Arg Lys His Phe Pro Ser Val Asn Trp Leu Ile	85	90	95
Ser Tyr Ser Lys Tyr Met Arg Ala Leu Asp Glu Tyr Tyr Asp Lys His	100	105	110
Phe Thr Glu Phe Val Pro Leu Arg Thr Lys Ala Lys Glu Ile Leu Gln	115	120	125
Glu Glu Glu Asp Leu Ala Glu Ile Val Gln Leu Val Gly Lys Ala Ser	130	135	140
Leu Ala Glu Thr Asp Lys Ile Thr Leu Glu Val Ala Lys Leu Ile Lys	145	150	155
Asp Asp Phe Leu Gln Gln Asn Gly Tyr Thr Pro Tyr Asp Arg Phe Cys	165	170	175
Pro Phe Tyr Lys Thr Val Gly Met Leu Ser Asn Met Ile Ala Phe Tyr	180	185	190
Asp Met Ala Arg Arg Val Phe Glu Thr Thr Ala Gln Ser Asp Asn Lys	195	200	205
Ile Thr Trp Ser Ile Ile Arg Glu His Met Gly Asp Ile Leu Tyr Lys	210	215	220
Leu Ser Ser Met Lys Phe Lys Asp Pro Leu Lys Asp Gly Glu Ala Lys	225	230	235
Ile Lys Ser Asp Tyr Ala Gln Leu Leu Glu Asp Met Gln Asn Ala Phe	245	250	255
Arg Ser Leu Glu Asp	260		



850

&lt;210&gt; 902

&lt;211&gt; 169

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 902

Phe Pro Gly Arg Pro Thr Arg Pro Arg Gly Ile Ser Val Ser Gly Gly  
 1 5 10 15

Glu Ala Val Cys Pro Val Gln Trp Arg Leu Arg Lys Leu Ala Ala Ala  
 20 25 30

Xaa Gly Lys Gly Gln Glu Val Glu Thr Ser Val Thr Tyr Tyr Arg Leu  
 35 40 45

Glu Glu Val Ala Lys Arg Asn Ser Leu Lys Glu Leu Trp Leu Val Ile  
 50 55 60

His Gly Arg Val Tyr Asp Val Thr Arg Phe Leu Asn Glu His Pro Gly  
 65 70 75 80

Gly Glu Glu Val Leu Leu Glu Gln Ala Gly Val Asp Ala Ser Glu Ser  
 85 90 95

Phe Glu Asp Val Gly His Ser Ser Asp Ala Arg Glu Met Leu Lys Gln  
 100 105 110

Tyr Tyr Ile Gly Asp Ile His Pro Ser Asp Leu Lys Pro Glu Ser Gly  
 115 120 125

Ser Lys Asp Pro Ser Lys Asn Asp Thr Cys Lys Ser Cys Trp Ala Tyr  
 130 135 140

Trp Ile Leu Pro Ile Ile Gly Ala Val Leu Leu Gly Phe Leu Tyr Arg  
 145 150 155 160

Tyr Tyr Thr Ser Glu Ser Lys Ser Ser  
 165

&lt;210&gt; 903

&lt;211&gt; 53

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

851

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 903

Pro Leu Cys Leu Ala Lys Asn Lys Asn Phe Leu Ile Leu Arg Xaa Asn  
1 5 10 15

Ile Gln Xaa Ile His Ile Lys Ser Leu Glu Asn Ile Ile Pro Phe Asp  
20 25 30

Ser Leu Ile Thr Leu Leu Glu Tyr Lys Glu Met Ile Leu Asn Ile Tyr  
35 40 45

Val Val Leu Trp Ser  
50

&lt;210&gt; 904

&lt;211&gt; 329

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 904

Arg Arg Xaa Ala Xaa Pro Arg Val Arg Trp Lys Ile Cys Gly Leu Ser  
1 5 10 15

Pro Thr Thr Thr Leu Ala Ile Tyr Phe Glu Val Val Asn Gln His Asn

852

20	25	30
Ala Pro Ile Xaa Gln Gly Gly Arg Gly Ala Ile Gln Phe Val Thr Gln 35 40 45		
Tyr Gln His Ser Ser Gly Gln Arg Arg Ile Arg Val Thr Thr Ile Ala 50 55 60		
Arg Asn Trp Ala Asp Ala Gln Thr Gln Ile Gln Asn Ile Ala Ala Ser 65 70 75 80		
Phe Asp Gln Glu Ala Ala Ala Ile Leu Met Ala Arg Leu Ala Ile Tyr 85 90 95		
Arg Ala Glu Thr Glu Glu Gly Pro Asp Val Leu Arg Trp Leu Asp Arg 100 105 110		
Gln Leu Ile Arg Leu Cys Gln Lys Phe Gly Glu Tyr His Lys Asp Asp 115 120 125		
Pro Ser Ser Phe Arg Phe Ser Glu Thr Phe Ser Leu Tyr Pro Gln Phe 130 135 140		
Met Phe His Leu Arg Arg Ser Ser Phe Leu Gln Val Phe Asn Asn Ser 145 150 155 160		
Pro Asp Glu Ser Ser Tyr Tyr Arg His His Phe Met Arg Gln Asp Leu 165 170 175		
Thr Gln Ser Leu Ile Met Ile Gln Pro Ile Leu Tyr Ala Tyr Ser Phe 180 185 190		
Ser Gly Pro Pro Glu Pro Val Leu Leu Asp Ser Ser Ser Ile Leu Ala 195 200 205		
Asp Arg Ile Leu Leu Met Asp Thr Phe Phe Gln Ile Leu Ile Tyr His 210 215 220		
Gly Glu Thr Ile Ala Gln Trp Arg Lys Ser Gly Tyr Gln Asp Met Pro 225 230 235 240		
Glu Tyr Glu Asn Phe Arg His Leu Leu Gln Ala Pro Val Asp Asp Ala 245 250 255		
Gln Glu Ile Leu His Ser Arg Phe Pro Met Pro Arg Tyr Ile Asp Thr 260 265 270		
Glu His Gly Gly Ser Gln Ala Arg Phe Leu Leu Ser Lys Val Asn Pro 275 280 285		
Ser Gln Thr His Asn Asn Met Tyr Ala Trp Gly Gln Glu Ser Gly Ala		

853

[illegible]

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<210> 905
<211> 264
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (48)
<223> Xaa equals any of the naturally occurring L-amino acids
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<400> 905
Phe Leu Leu Pro Thr Leu Trp Phe Cys Ser Pro Ser Ala Lys Tyr Phe
  1                      5                      10                      15

Phe Lys Met Ala Phe Tyr Asn Gly Trp Ile Leu Phe Leu Ala Val Leu
      20                      25                      30

Ala Ile Pro Val Cys Ala Val Arg Gly Arg Asn Val Glu Asn Met Xaa
      35                      40                      45

Ile Leu Arg Leu Met Leu Leu His Ile Lys Tyr Leu Tyr Gly Ile Arg
      50                      55                      60

Val Glu Val Arg Gly Ala His His Phe Pro Pro Ser Gln Pro Tyr Val
      65                      70                      75                      80

Val Val Ser Asn His Gln Ser Ser Leu Asp Leu Leu Gly Met Met Glu
      85                      90                      95

Val Leu Pro Gly Arg Cys Val Pro Ile Ala Lys Arg Glu Leu Leu Trp
      100                      105                      110

Ala Gly Ser Ala Gly Leu Ala Cys Trp Leu Ala Gly Val Ile Phe Ile
      115                      120                      125

Asp Arg Lys Arg Thr Gly Asp Ala Ile Ser Val Met Ser Glu Val Ala
      130                      135                      140

Gln Thr Leu Leu Thr Gln Asp Val Arg Val Trp Val Phe Pro Glu Gly
      145                      150                      155                      160

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854

Thr Arg Asn His Asn Gly Ser Met Leu Pro Phe Lys Arg Gly Ala Phe  
                             165                            170                            175  
 His Leu Ala Val Gln Ala Gln Val Pro Ile Val Pro Ile Val Met Ser  
                             180                            185                            190  
 Ser Tyr Gln Asp Phe Tyr Cys Lys Lys Glu Arg Arg Phe Thr Ser Gly  
                             195                            200                            205  
 Gln Cys Gln Val Arg Val Leu Pro Pro Val Pro Thr Glu Gly Leu Thr  
                             210                            215                            220  
 Pro Asp Asp Val Pro Ala Leu Ala Asp Arg Val Arg His Ser Met Leu  
                             225                            230                            235                            240  
 Thr Val Phe Arg Glu Ile Ser Thr Asp Gly Arg Gly Gly Gly Asp Tyr  
                             245                            250                            255  
 Leu Lys Lys Pro Gly Gly Gly Gly  
                             260

&lt;210&gt; 906

&lt;211&gt; 189

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 906

Xaa Xaa Pro Xaa Pro Glu Phe Pro Gly Arg Thr His Ala Ser Gly Leu  
     1                            5                            10                            15

Leu Arg Ser Arg Leu Ala Leu Arg Trp Leu Ser His Val Arg Arg Pro  
                             20                            25                            30

Ser Arg Arg Val Pro Arg Met Pro Arg Gly Ser Arg Ser Arg Thr Ser

855

35 40 45

Arg Met Ala Pro Pro Ala Ser Arg Ala Pro Gln Met Arg Ala Ala Pro  
50 55 60

Arg Pro Ala Pro Val Ala Gln Pro Pro Ala Ala Ala Pro Pro Ser Ala  
65 70 75 80

Val Gly Ser Ser Ala Ala Ala Pro Arg Gln Pro Gly Leu Met Ala Gln  
85 90 95

Met Ala Thr Thr Ala Ala Gly Val Ala Val Gly Ser Ala Val Gly His  
100 105 110

Thr Leu Gly His Ala Ile Thr Gly Gly Phe Ser Gly Gly Ser Asn Ala  
115 120 125

Glu Pro Ala Arg Pro Asp Ile Thr Tyr Gln Glu Pro Gln Gly Thr Gln  
130 135 140

Pro Ala Gln Gln Gln Gln Pro Cys Leu Tyr Glu Ile Lys Gln Phe Leu  
145 150 155 160

Glu Cys Ala Gln Asn Gln Gly Asp Ile Lys Leu Cys Glu Gly Phe Asn  
165 170 175

Glu Val Leu Lys Gln Cys Arg Leu Ala Asn Gly Leu Ala  
180 185

&lt;210&gt; 907

&lt;211&gt; 638

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (73)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (427)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 907

Tyr Val Gln Gly Tyr Ser Leu Ser Gln Ala Asp Val Asp Ala Phe Arg  
 1 5 10 15

Gln Leu Ser Ala Pro Pro Ala Asp Pro Gln Leu Phe His Val Ala Arg  
 20 25 30

Trp Phe Arg His Ile Glu Ala Leu Leu Gly Xaa Pro Cys Gly Lys Gly  
 35 40 45

Gln Pro Cys Xaa Leu Pro Ser Xaa Gln Arg Pro Ala Cys Ala Ala Pro  
 50 55 60

Val Val Pro Ser Cys Trp Asp Pro Xaa Cys Arg Leu His Leu Tyr Asn  
 65 70 75 80

Ser Leu Thr Arg Asn Lys Glu Val Phe Ile Pro Gln Asp Gly Lys Lys  
 85 90 95

Val Thr Trp Tyr Cys Cys Gly Pro Thr Val Tyr Asp Ala Ser His Met  
 100 105 110

Gly His Ala Arg Ser Tyr Ile Ser Phe Asp Ile Leu Arg Arg Val Leu  
 115 120 125

Lys Asp Tyr Phe Lys Phe Asp Val Phe Tyr Cys Met Asn Ile Thr Asp  
 130 135 140

Ile Asp Asp Lys Ile Ile Lys Arg Ala Arg Gln Asn His Leu Phe Glu  
 145 150 155 160

Gln Tyr Arg Glu Lys Arg Pro Glu Ala Ala Gln Leu Leu Glu Asp Val  
 165 170 175

Gln Ala Ala Leu Lys Pro Phe Ser Val Lys Leu Asn Glu Thr Thr Asp  
 180 185 190

Pro Asp Lys Lys Gln Met Leu Glu Arg Ile Gln His Ala Val Gln Leu  
 195 200 205

Ala Thr Glu Pro Leu Glu Lys Ala Val Gln Ser Arg Leu Thr Gly Glu

857

210	215	220
Glu Val Asn Ser Cys Val Glu Val Leu Leu Glu Glu Ala Lys Asp Leu		
225	230	235 240
Leu Ser Asp Trp Leu Asp Ser Thr Leu Gly Cys Asp Val Thr Asp Asn		
	245	250 255
Ser Ile Phe Ser Lys Leu Pro Lys Phe Trp Glu Gly Asp Phe His Arg		
	260	265 270
Asp Met Glu Ala Leu Asn Val Leu Pro Pro Asp Val Leu Thr Arg Val		
	275	280 285
Ser Glu Tyr Val Pro Glu Ile Val Asn Phe Val Gln Lys Ile Val Asp		
	290	295 300
Asn Gly Tyr Gly Tyr Val Ser Asn Gly Ser Val Tyr Phe Asp Thr Ala		
305	310	315 320
Lys Phe Ala Ser Ser Glu Lys His Ser Tyr Gly Lys Leu Val Pro Glu		
	325	330 335
Ala Val Gly Asp Gln Lys Ala Leu Gln Glu Gly Glu Gly Asp Leu Ser		
	340	345 350
Ile Ser Ala Asp Arg Leu Ser Glu Lys Arg Ser Pro Asn Asp Phe Ala		
	355	360 365
Leu Trp Lys Ala Ser Lys Pro Gly Glu Pro Ser Trp Pro Cys Pro Trp		
	370	375 380
Gly Lys Gly Arg Pro Gly Trp His Ile Glu Cys Ser Ala Met Ala Gly		
385	390	395 400
Thr Leu Leu Gly Ala Ser Met Asp Ile His Gly Gly Gly Phe Asp Leu		
	405	410 415
Arg Phe Pro His His Asp Asn Glu Leu Ala Xaa Ser Glu Ala Tyr Phe		
	420	425 430
Glu Asn Asp Cys Trp Val Arg Tyr Phe Leu His Thr Gly His Leu Thr		
	435	440 445
Ile Ala Gly Cys Lys Met Ser Lys Ser Leu Lys Asn Phe Ile Thr Ile		
	450	455 460
Lys Asp Ala Leu Lys Lys His Ser Ala Arg Gln Leu Arg Leu Ala Phe		
465	470	475 480
Leu Met His Ser Trp Lys Asp Thr Leu Asp Tyr Ser Ser Asn Thr Met		



858

	485		490		495
Glu Ser Ala	Leu Gln Tyr Glu Lys	Phe Leu Asn Glu Phe Phe Leu Asn			
	500	505		510	
Val Lys Asp	Ile Leu Arg Ala Pro Val Asp Ile Thr Gly Gln Phe Glu				
	515	520		525	
Lys Trp Gly	Glu Glu Glu Ala Glu Leu Asn Lys Asn Phe Tyr Asp Lys				
	530	535		540	
Lys Thr Ala	Ile His Lys Ala Leu Cys Asp Asn Val Asp Thr Arg Thr				
	545	550		555	560
Val Met Glu	Glu Met Arg Ala Leu Val Ser Gln Cys Asn Leu Tyr Met				
	565	570		575	
Ala Ala Arg	Lys Ala Val Arg Lys Arg Pro Asn Gln Ala Leu Leu Glu				
	580	585		590	
Asn Ile Ala	Leu Tyr Leu Thr His Met Leu Lys Ile Phe Gly Ala Val				
	595	600		605	
Glu Glu Asp	Ser Ser Leu Gly Phe Pro Val Gly Gly Pro Gly Thr Ser				
	610	615		620	
Leu Ser Leu	Glu Ala Thr Val Met Pro Tyr Leu Gln Val Leu				
	625	630		635	

&lt;210&gt; 908

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 908

Ser His Pro	Leu Arg Ser Arg	Leu Pro Ser	Ala Thr Gly	Val Gly His
1	5	10		15
Ala Leu Ala	Arg Ser Phe Cys Arg	His Leu Gly	Ser Ala Phe	Pro Ala
	20	25		30
Gln Asn Ala	Arg Arg Ser Thr	Glu Thr Val	Pro Ala Thr	Glu Gln Glu
	35	40		45
Leu Pro Gln	Pro Gln Ala Glu	Thr Gly Ser	Gly Thr Glu	Ser Asp Ser
	50	55		60
Asp Glu Ser	Val Pro Glu Leu	Glu Glu Gln	Asp Ser Thr	Gln Ala Thr
	65	70		75
				80

859

Thr Gln Gln Ala Gln Leu Ala Ala Ala Glu Ile Asp Glu Glu Pro  
                     85                    90                    95  
 Val Ser Lys Ala Lys Gln Ser Arg Ser Glu Lys Lys Ala Arg Lys Ala  
                     100                    105                    110  
 Met Ser Lys Leu Gly Leu Arg Gln Val Thr Gly Val Thr Arg Val Thr  
                     115                    120                    125  
 Ile Arg Lys Ser Lys Asn Ile Leu Phe Val Ile Thr Lys Pro Asp Val  
                     130                    135                    140  
 Tyr Lys Ser Pro Ala Ser Asp Thr Tyr Ile Val Phe Gly Glu Ala Lys  
                     145                    150                    155                    160  
 Ile Glu Asp Leu Ser Gln Gln Ala Gln Leu Ala Ala Ala Glu Lys Phe  
                     165                    170                    175  
 Lys Val Gln Gly Glu Ala Val Ser Asn Ile Gln Glu Asn Thr Gln Thr  
                     180                    185                    190  
 Pro Thr Val Gln Glu Glu Ser Glu Glu Glu Glu Val Asp Glu Thr Gly  
                     195                    200                    205  
 Val Glu Val Lys Asp Ile Glu Leu Val Met Ser Gln Ala Asn Val Ser  
                     210                    215                    220  
 Arg Ala Lys Ala Val Arg Ala Leu Lys Asn Asn Ser Asn Asp Ile Val  
                     225                    230                    235                    240  
 Asn Ala Ile Met Glu Leu Thr Met  
                     245

&lt;210&gt; 909

&lt;211&gt; 161

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (46)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (158)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

860

&lt;400&gt; 909

Gln Gly Cys Cys Tyr Gly Ala Gly Arg Arg Val Ala Arg Leu Leu Ala  
 1 5 10 15

Pro Leu Met Trp Arg Arg Ala Val Ser Ser Val Ala Gly Ser Ala Val  
 20 25 30

Gly Ala Glu Pro Gly Leu Arg Leu Leu Ala Val Gln Arg Xaa Pro Val  
 35 40 45

Glu Gln Arg Ser Ala Gly Leu Ala Arg Pro Gln Thr Leu Ser Ala Ala  
 50 55 60

Cys Thr Ala Lys Pro Gly Leu Glu Glu Arg Ala Glu Gly Thr Val Asn  
 65 70 75 80

Glu Gly Arg Pro Glu Ser Asp Ala Ala Asp His Thr Gly Pro Lys Phe  
 85 90 95

Asp Ile Asp Met Met Val Ser Leu Leu Arg Gln Glu Asn Ala Arg Asp  
 100 105 110

Ile Cys Val Ile Gln Val Pro Pro Glu Met Arg Tyr Thr Asp Tyr Phe  
 115 120 125

Val Ile Val Ser Gly Thr Ser Thr Arg His Leu His Ala Met Ala Phe  
 130 135 140

Tyr Val Val Lys Met Tyr Lys His Leu Lys Cys Lys Arg Xaa Pro Ser  
 145 150 155 160

Cys

&lt;210&gt; 910

&lt;211&gt; 487

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 910

Lys Ala Ala Ser Gly Pro Ala Thr Ser Ile Thr Gly Val Thr Met Gly  
 1 5 10 15

Ala Val Leu Gly Val Phe Ser Leu Ala Ser Trp Val Pro Cys Leu Cys  
 20 25 30

Ser Gly Ala Ser Cys Leu Leu Cys Ser Cys Cys Pro Asn Ser Lys Asn  
 35 40 45

Ser Thr Val Thr Arg Leu Ile Tyr Ala Phe Ile Leu Leu Leu Ser Thr  
 50 55 60  
 Val Val Ser Tyr Ile Met Gln Arg Lys Glu Met Glu Thr Tyr Leu Lys  
 65 70 75 80  
 Lys Ile Pro Gly Phe Cys Glu Gly Gly Phe Lys Ile His Glu Ala Asp  
 85 90 95  
 Ile Asn Ala Asp Lys Asp Cys Asp Val Leu Val Gly Tyr Lys Ala Val  
 100 105 110  
 Tyr Arg Ile Ser Phe Ala Met Ala Ile Phe Phe Phe Val Phe Ser Leu  
 115 120 125  
 Leu Met Phe Lys Val Lys Thr Ser Lys Asp Leu Arg Ala Ala Val His  
 130 135 140  
 Asn Gly Phe Trp Phe Phe Lys Ile Ala Ala Leu Ile Gly Ile Met Val  
 145 150 155 160  
 Gly Ser Phe Tyr Ile Pro Gly Gly Tyr Phe Ser Ser Val Trp Phe Val  
 165 170 175  
 Val Gly Met Ile Gly Ala Ala Leu Phe Ile Leu Ile Gln Leu Val Leu  
 180 185 190  
 Leu Val Asp Phe Ala His Ser Trp Asn Glu Ser Trp Val Asn Arg Met  
 195 200 205  
 Glu Glu Gly Asn Pro Arg Leu Trp Tyr Ala Ala Leu Leu Ser Phe Thr  
 210 215 220  
 Ser Ala Phe Tyr Ile Leu Ser Ile Ile Cys Val Gly Leu Leu Tyr Thr  
 225 230 235 240  
 Tyr Tyr Thr Lys Pro Asp Gly Cys Thr Glu Asn Lys Phe Phe Ile Ser  
 245 250 255  
 Ile Asn Leu Ile Leu Cys Val Val Ala Ser Ile Ile Ser Ile His Pro  
 260 265 270  
 Lys Ile Gln Glu His Gln Pro Arg Ser Gly Leu Leu Gln Ser Ser Leu  
 275 280 285  
 Ile Thr Leu Tyr Thr Met Tyr Leu Thr Trp Ser Ala Met Ser Asn Glu  
 290 295 300  
 Pro Asp Arg Ser Cys Asn Pro Asn Leu Met Ser Phe Ile Thr Arg Ile  
 305 310 315 320

862

Thr Ala Pro Thr Leu Ala Pro Gly Asn Ser Thr Ala Val Val Pro Thr  
                                   325                                  330                                  335  
 Pro Thr Pro Pro Ser Lys Ser Gly Ser Leu Leu Asp Ser Asp Asn Phe  
                                   340                                  345                                  350  
 Ile Gly Leu Phe Val Phe Val Leu Cys Leu Leu Tyr Ser Ser Ile Arg  
                                   355                                  360                                  365  
 Thr Ser Thr Asn Ser Gln Val Asp Lys Leu Thr Leu Ser Gly Ser Asp  
                                   370                                  375                                  380  
 Ser Val Ile Leu Gly Asp Thr Thr Thr Ser Gly Ala Ser Asp Glu Glu  
 385                                  390                                  395                                  400  
 Asp Gly Gln Pro Arg Arg Ala Val Asp Asn Glu Lys Glu Gly Val Gln  
                                   405                                  410                                  415  
 Tyr Ser Tyr Ser Leu Phe His Leu Met Leu Cys Leu Ala Ser Leu Tyr  
                                   420                                  425                                  430  
 Ile Met Met Thr Leu Thr Ser Trp Tyr Ser Pro Asp Ala Lys Phe Gln  
                                   435                                  440                                  445  
 Ser Met Thr Ser Lys Trp Pro Ala Val Trp Val Lys Ile Ser Ser Ser  
                                   450                                  455                                  460  
 Trp Val Cys Leu Leu Leu Tyr Val Trp Thr Leu Val Ala Pro Leu Val  
 465                                  470                                  475                                  480  
 Leu Thr Ser Arg Asp Phe Ser  
                                   485

&lt;210&gt; 911

&lt;211&gt; 98

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (69)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 911

Asp Pro Arg Val Arg His Arg Gly Asn Lys Val Val Lys Lys Lys Val  
   1                                  5                                  10                                  15

Leu Val Arg Cys Arg His Phe Ile Cys Pro His Ser Leu Arg Leu Ser  
                                   20                                  25                                  30

863

[illegible]

```
<210> 912
<211> 206
<212> PRT
<213> Homo sapiens
```

```

<400> 912
Phe Ser Leu Phe Pro Leu Ala Lys Ser Phe Asp Asp Gly Asp Tyr Phe
  1             5             10             15

Pro Val Trp Gly Thr Cys Leu Gly Phe Glu Glu Leu Ser Leu Leu Ile
      20             25             30

Ser Gly Glu Cys Leu Leu Thr Ala Thr Asp Thr Val Asp Val Ala Met
      35             40             45

Pro Leu Asn Phe Thr Gly Gly Gln Leu His Ser Arg Met Phe Gln Asn
      50             55             60

Phe Pro Thr Glu Leu Leu Leu Ser Leu Ala Val Glu Pro Leu Thr Ala
      65             70             75             80

Asn Phe His Lys Trp Ser Leu Ser Val Lys Asn Phe Thr Met Asn Glu
      85             90             95

Lys Leu Lys Lys Phe Phe Asn Val Leu Thr Thr Asn Thr Asp Gly Lys
      100             105             110

Ile Glu Phe Ile Ser Thr Met Glu Gly Tyr Lys Tyr Pro Val Tyr Gly
      115             120             125

Val Gln Trp His Pro Glu Lys Ala Pro Tyr Glu Trp Lys Asn Leu Asp
      130             135             140

```

864

Gly Ile Ser His Ala Pro Asn Ala Val Lys Thr Ala Phe Tyr Leu Ala  
 145 150 155 160

Glu Phe Phe Val Asn Glu Ala Arg Lys Asn Asn His His Phe Lys Ser  
 165 170 175

Glu Ser Glu Glu Glu Lys Ala Leu Ile Tyr Gln Phe Ser Pro Ile Tyr  
 180 185 190

Thr Gly Asn Ile Ser Ser Phe Gln Gln Cys Tyr Ile Phe Asp  
 195 200 205

<210> 913  
 <211> 91  
 <212> PRT  
 <213> Homo sapiens

<400> 913  
 Phe Ser Gly Pro Cys Pro Val Asn Thr Leu Gly Trp Glu Val Ser Ser  
 1 5 10 15

Phe Ser Pro Leu Leu Ser Ser Cys Leu Asn Met Val Arg Thr Lys Ala  
 20 25 30

Asp Ser Val Pro Gly Thr Tyr Arg Lys Val Val Ala Ala Arg Ala Pro  
 35 40 45

Arg Lys Val Leu Gly Ser Ser Thr Ser Ala Thr Asn Ser Thr Ser Val  
 50 55 60

Ser Ser Arg Lys Glu His Val Leu Cys Asn Leu Ile Thr Gln Met Met  
 65 70 75 80

Lys Lys Asn Arg Thr Phe Ser Phe Ile Phe Glu  
 85 90

<210> 914  
 <211> 178  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (132)  
 <223> xaa equals any of the naturally occurring L-amino acids  
 <220>

865

&lt;221&gt; SITE

&lt;222&gt; (147)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (154)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 914

Arg	Glu	Leu	Ser	Thr	Arg	Gln	Arg	Ser	Gln	Ala	Lys	Pro	Pro	Ala	Ser
1				5					10					15	

Met	Ala	Ser	Glu	Phe	Lys	Lys	Lys	Leu	Phe	Trp	Arg	Ala	Val	Val	Ala
			20					25					30		

Glu	Phe	Leu	Ala	Thr	Thr	Leu	Phe	Val	Phe	Ile	Ser	Ile	Gly	Ser	Ala
		35					40					45			

Leu	Gly	Phe	Lys	Tyr	Pro	Val	Gly	Asn	Asn	Gln	Thr	Ala	Val	Gln	Asp
	50						55				60				

Asn	Val	Lys	Val	Ser	Leu	Ala	Phe	Gly	Leu	Ser	Ile	Ala	Thr	Leu	Ala
65					70					75					80

Gln	Ser	Val	Gly	His	Ile	Ser	Gly	Ala	His	Leu	Asn	Pro	Ala	Val	Thr
				85					90					95	

Leu	Gly	Leu	Leu	Leu	Ser	Cys	Gln	Ile	Ser	Ile	Phe	Arg	Ala	Leu	Met
		100						105						110	

Tyr	Ile	Ile	Ala	Gln	Cys	Val	Gly	Ala	Ile	Val	Ala	Thr	Ala	Ile	Leu
		115						120				125			

Ser	Gly	Ile	Xaa	Ser	Ser	Leu	Thr	Gly	Asn	Ser	Leu	Gly	Arg	Asn	Asp
		130				135					140				

Leu	Ala	Xaa	Gly	Val	Asn	Phe	Gly	Pro	Xaa	Pro	Gly	His	Arg	Asp	His
145					150					155				160	

Arg	Asp	Pro	Pro	Ala	Gly	Ala	Met	Arg	Ala	Gly	Tyr	Tyr	Arg	Pro	Glu
				165					170					175	

Ala Pro

&lt;210&gt; 915

&lt;211&gt; 377

&lt;212&gt; PRT



866

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (355)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 915

Val	Cys	Ala	His	Gly	Gln	Gly	Leu	Leu	Arg	Tyr	Phe	Tyr	Ser	Arg	Arg
1				5					10					15	

Ile	Asp	Ile	Thr	Leu	Ser	Ser	Val	Lys	Cys	Phe	His	Lys	Leu	Ala	Ser
			20					25					30		

Ala	Tyr	Gly	Ala	Arg	Gln	Leu	Gln	Gly	Tyr	Cys	Ala	Ser	Leu	Phe	Ala
		35				40						45			

Ile	Leu	Leu	Pro	Gln	Asp	Pro	Ser	Phe	Gln	Met	Pro	Leu	Asp	Leu	Tyr
	50					55					60				

Ala	Tyr	Ala	Val	Ala	Thr	Gly	Asp	Ala	Leu	Leu	Glu	Lys	Leu	Cys	Leu
65					70				75						80

Gln	Phe	Leu	Ala	Trp	Asn	Phe	Glu	Ala	Leu	Thr	Gln	Ala	Glu	Ala	Trp
			85						90					95	

Pro	Ser	Val	Pro	Thr	Asp	Leu	Leu	Gln	Leu	Leu	Leu	Pro	Arg	Ser	Asp
		100						105					110		

Leu	Ala	Val	Pro	Ser	Glu	Leu	Ala	Leu	Leu	Lys	Ala	Val	Asp	Thr	Trp
	115						120					125			

Ser	Trp	Gly	Glu	Arg	Ala	Ser	His	Glu	Glu	Val	Glu	Gly	Leu	Val	Glu
	130					135					140				

Lys	Ile	Arg	Phe	Pro	Met	Met	Leu	Pro	Glu	Glu	Leu	Phe	Glu	Leu	Gln
145					150					155					160

Phe	Asn	Leu	Ser	Leu	Tyr	Trp	Ser	His	Glu	Ala	Leu	Phe	Gln	Lys	Lys
			165						170					175	

Thr	Leu	Gln	Ala	Leu	Glu	Phe	His	Thr	Val	Pro	Phe	Gln	Leu	Leu	Ala
		180						185					190		

Arg	Tyr	Lys	Gly	Leu	Asn	Leu	Thr	Glu	Asp	Thr	Tyr	Lys	Pro	Arg	Ile
		195					200					205			

Tyr	Thr	Ser	Pro	Thr	Trp	Ser	Ala	Phe	Val	Thr	Asp	Ser	Ser	Trp	Ser
	210					215					220				

Ala	Arg	Lys	Ser	Gln	Leu	Val	Tyr	Gln	Ser	Arg	Arg	Gly	Pro	Leu	Val
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

867

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225                230                235                240
Lys Tyr Ser Ser Asp Tyr Phe Gln Ala Pro Ser Asp Tyr Arg Tyr Tyr
                245                250                255
Pro Tyr Gln Ser Phe Gln Thr Pro Gln His Pro Ser Phe Leu Phe Gln
                260                265                270
Asp Lys Arg Val Ser Trp Ser Leu Val Tyr Leu Pro Thr Ile Gln Ser
                275                280                285
Cys Trp Asn Tyr Gly Phe Ser Cys Ser Ser Asp Glu Leu Pro Val Leu
                290                295                300
Gly Leu Thr Lys Ser Gly Gly Ser Asp Arg Thr Ile Ala Tyr Glu Asn
305                310                315                320
Lys Ala Leu Met Leu Cys Glu Gly Leu Phe Val Ala Asp Val Thr Asp
                325                330                335
Phe Glu Gly Trp Lys Ala Ala Ile Pro Ser Ala Leu Asp Thr Asn Ser
                340                345                350
Ser Lys Xaa Thr Ser Ser Phe Pro Cys Pro Ala Gly Thr Ser Thr Ala
                355                360                365
Ser Ala Arg Ser Ser Ala Pro Ser Thr
                370                375

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&lt;210&gt; 916

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 916

```

Arg Val Gln Arg Asp Thr Cys Leu Pro Pro Met Ser Leu Ser Phe His
 1                5                10                15
Leu Pro Ser Arg Arg Met Lys Asn Pro Ser Ile Val Gly Val Leu Cys
                20                25                30
Thr Asp Ser Gln Gly Leu Asn Leu Gly Cys Arg Gly Thr Leu Ser Asp
                35                40                45
Glu His Ala Gly Val Ile Ser Val Leu Ala Gln Gln Ala Ala Lys Leu
                50                55                60
Thr Ser Asp Pro Thr Asp Ile Pro Val Val Cys Leu Glu Ser Asp Asn
 65                70                75                80

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868

Gly Asn Ile Met Ile Gln Lys His Asp Gly Ile Thr Val Ala Val His  
                   85                  90                  95

Lys Met Ala Ser  
                   100

&lt;210&gt; 917

&lt;211&gt; 245

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (87)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (172)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (240)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (242)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 917

Leu Pro Pro Arg Ser Val Gly Gly Leu Gln Lys Met Arg Arg Lys Leu  
   1                  5                  10                  15

Gly Leu Val Gln Val Glu Leu Glu Glu Asp Gly Ala Leu Val Ser Lys  
                   20                  25                  30

869

Leu Leu Glu Thr Met His Leu Thr Gly Ala Asp Xaa Thr Asn Thr Phe  
           35                          40                          45  
 Tyr Leu Leu Ser Ser Phe Pro Val Glu Leu Glu Ser Pro Gly Leu Xaa  
           50                          55                          60  
 Glu Phe Leu Ala Arg Leu Met Glu Gln Cys Ala Ser Leu Glu Glu Leu  
           65                          70                          75                          80  
 Arg Leu Ala Phe Arg Pro Xaa Met Asp Pro Arg Gln Leu Ser Met Met  
                           85                          90                          95  
 Leu Met Leu Ala Gln Ser Asn Pro Gln Leu Phe Ala Leu Met Gly Thr  
                           100                          105                          110  
 Arg Ala Gly Ile Ala Arg Glu Leu Glu Arg Val Glu Gln Gln Ser Arg  
           115                          120                          125  
 Leu Glu Gln Leu Ser Ala Ala Glu Leu Gln Ser Arg Asn Gln Gly His  
           130                          135                          140  
 Trp Ala Asp Trp Leu Gln Ala Tyr Arg Ala Arg Leu Asp Lys Asp Leu  
           145                          150                          155                          160  
 Glu Gly Ala Gly Asp Ala Ala Ala Trp Gln Ala Xaa Ala Arg Ala Arg  
                           165                          170                          175  
 Asp Ala Arg Gln Gln Pro Glu Val Arg Ala Glu Glu Leu His Ser Arg  
                           180                          185                          190  
 Arg Met Pro Phe Glu Val Ala Glu Arg Gly Asp Phe Ser Glu Val Arg  
           195                          200                          205  
 Arg Val Leu Lys Leu Phe Glu Thr Leu Tyr His Cys Glu Ala Gly Ala  
           210                          215                          220  
 Ala Thr Arg Arg Pro Arg Pro Arg Glu Ala Asp Gly Gly Gly Arg Xaa  
           225                          230                          235                          240  
 Gly Xaa Phe Leu Thr  
                           245

&lt;210&gt; 918

&lt;211&gt; 44

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 918

Asn Ser Ala Arg Arg Ile Ser Leu Lys Glu Gly Glu Gly Lys Thr Asp

870

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      1             5             10             15
Phe Leu Cys Gly Thr Lys Thr Lys Pro Ser Val Ser Leu Cys Glu Gln
      20             25             30

Arg Cys Lys Lys Glu Glu Thr Gln Phe Thr His Gly
      35             40

<210> 919
<211> 160
<212> PRT
<213> Homo sapiens

<400> 919
Phe Gly Thr Arg Val Thr Ser Gly Gly Ser Arg Asp Ala Val Pro Gly
  1             5             10             15

Ala Glu Pro Pro Lys Met Ala Val Cys Ile Ala Val Ile Ala Lys Glu
      20             25             30

Asn Tyr Pro Leu Tyr Ile Arg Ser Thr Pro Thr Glu Asn Glu Leu Lys
      35             40             45

Phe His Tyr Met Val His Thr Ser Leu Asp Val Val Asp Glu Lys Ile
      50             55             60

Ser Ala Met Gly Lys Ala Leu Val Asp Gln Arg Glu Leu Tyr Leu Gly
      65             70             75             80

Leu Leu Tyr Pro Thr Glu Asp Tyr Lys Val Tyr Gly Tyr Val Thr Asn
      85             90             95

Ser Lys Val Lys Phe Val Met Val Val Asp Ser Ser Asn Thr Ala Leu
      100            105            110

Arg Asp Asn Glu Ile Arg Ser Met Phe Arg Lys Leu His Asn Ser Tyr
      115            120            125

Thr Asp Val Met Cys Asn Pro Phe Tyr Asn Pro Gly Asp Arg Ile Gln
      130            135            140

Ser Arg Ala Phe Asp Asn Met Val Thr Ser Met Met Ile Gln Val Cys
      145            150            155            160

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871

&lt;210&gt; 920

&lt;211&gt; 40

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 920

```

Leu Ala Phe Phe Leu Thr Ser Glu Gly Glu Lys Lys Val Ala Thr Tyr
  1             5             10             15

Met Phe Glu Lys Pro Leu Lys Ser Thr Gln Ser Lys Asp Phe Met Leu
             20             25             30

Gln Phe Gly His Met Leu Arg Val
             35             40

```

&lt;210&gt; 921

&lt;211&gt; 372

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 921

```

Leu Leu Gly Pro Ala Gly Gln Arg Ser His Ala Ala Pro Met Arg Pro
  1             5             10             15

Leu Pro Pro Val Gly Asp Val Arg Leu Glu Leu Ser Pro Pro Pro Pro
             20             25             30

Leu Leu Pro Val Pro Val Val Ser Gly Ser Pro Val Gly Ser Ser Gly
             35             40             45

Arg Leu Met Ala Ser Ser Ser Ser Leu Val Pro Asp Arg Leu Arg Leu
             50             55             60

Pro Leu Cys Phe Leu Gly Val Phe Val Cys Tyr Phe Tyr Tyr Gly Ile
             65             70             75             80

Leu Gln Glu Lys Ile Thr Arg Gly Lys Tyr Gly Glu Gly Ala Lys Gln
             85             90             95

Glu Thr Phe Thr Phe Ala Leu Thr Leu Val Phe Ile Gln Cys Val Ile
             100             105             110

Asn Ala Val Phe Ala Lys Ile Leu Ile Gln Phe Phe Asp Thr Ala Arg
             115             120             125

Val Asp Arg Thr Arg Ser Trp Leu Tyr Ala Ala Cys Ser Ile Ser Tyr
             130             135             140

Leu Gly Ala Met Val Ser Ser Asn Ser Ala Leu Gln Phe Val Asn Tyr

```

872

145		150		155		160
Pro Thr Gln Val	Leu Gly Lys Ser Cys Lys	Pro Ile Pro Val	Met Leu			
	165	170	175			
Leu Gly Val Thr	Leu Leu Lys Lys Lys Tyr	Pro Leu Ala Lys Tyr	Leu			
	180	185	190			
Cys Val Leu Leu	Ile Val Ala Gly Val Ala Leu Phe	Met Tyr Lys Pro				
	195	200	205			
Lys Lys Val Val	Gly Ile Glu Glu His Thr Val Gly Tyr Gly Glu	Leu				
	210	215	220			
Leu Leu Leu Leu	Ser Leu Thr Leu Asp Gly Leu Thr Gly Val Ser Gln					
	225	230	235			240
Asp His Met Arg	Ala His Tyr Gln Thr Gly Ser Asn His Met Met Leu					
	245	250	255			
Asn Ile Asn Leu	Trp Ser Thr Leu Leu Leu Gly Met Gly Ile Leu Phe					
	260	265	270			
Thr Gly Glu Leu	Trp Glu Phe Leu Ser Phe Ala Glu Arg Tyr Pro Ala					
	275	280	285			
Ile Ile Tyr Asn	Ile Leu Leu Phe Gly Leu Thr Ser Ala Leu Gly Gln					
	290	295	300			
Ser Phe Ile Phe	Met Thr Val Val Tyr Phe Gly Pro Leu Thr Cys Ser					
	305	310	315			320
Ile Ile Thr Thr	Thr Arg Lys Phe Phe Thr Ile Leu Ala Ser Val Ile					
	325	330	335			
Leu Phe Ala Asn	Pro Ile Ser Pro Met Gln Trp Val Gly Thr Val Leu					
	340	345	350			
Val Phe Leu Gly	Leu Gly Leu Asp Ala Lys Phe Gly Lys Gly Ala Lys					
	355	360	365			
Lys Thr Ser His						
	370					

&lt;210&gt; 922

&lt;211&gt; 363

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

873

&lt;400&gt; 922

```

Pro Ala Arg Thr Met Phe Tyr Ala His Phe Val Leu Ser Lys Arg Gly
 1             5             10             15

Pro Leu Ala Lys Ile Trp Leu Ala Ala His Trp Asp Lys Lys Leu Thr
      20             25             30

Lys Ala His Val Phe Glu Cys Asn Leu Glu Ser Ser Val Glu Ser Ile
      35             40             45

Ile Ser Pro Lys Val Lys Met Ala Leu Arg Thr Ser Gly His Leu Leu
 50             55             60

Leu Gly Val Val Arg Ile Tyr His Arg Lys Ala Lys Tyr Leu Leu Ala
 65             70             75             80

Asp Cys Asn Glu Ala Phe Ile Lys Ile Lys Met Ala Phe Arg Pro Gly
      85             90             95

Val Val Asp Leu Pro Glu Glu Asn Arg Glu Ala Ala Tyr Asn Ala Ile
 100             105             110

Thr Leu Pro Glu Glu Phe His Asp Phe Asp Gln Pro Leu Pro Asp Leu
 115             120             125

Asp Asp Ile Asp Val Ala Gln Gln Phe Ser Leu Asn Gln Ser Arg Val
 130             135             140

Glu Glu Ile Thr Met Arg Glu Glu Val Gly Asn Ile Ser Ile Leu Gln
 145             150             155             160

Glu Asn Asp Phe Gly Asp Phe Gly Met Asp Asp Arg Glu Ile Met Arg
      165             170             175

Glu Gly Ser Ala Phe Glu Asp Asp Asp Met Leu Val Ser Thr Thr Thr
 180             185             190

Ser Asn Leu Leu Leu Glu Ser Glu Gln Ser Thr Ser Asn Leu Asn Glu
 195             200             205

Lys Ile Asn His Leu Glu Tyr Glu Asp Gln Tyr Lys Asp Asp Asn Phe
 210             215             220

Gly Glu Gly Asn Asp Gly Gly Ile Leu Asp Asp Lys Leu Ile Ser Asn
 225             230             235             240

Asn Asp Gly Gly Ile Phe Asp Asp Pro Pro Ala Leu Ser Glu Ala Gly
      245             250             255

Val Met Leu Pro Glu Gln Pro Ala His Asp Asp Met Asp Glu Asp Asp
 260             265             270

```



874

Asn Val Ser Met Gly Gly Pro Asp Ser Pro Asp Ser Val Asp Pro Val  
 275 280 285

Glu Pro Met Pro Thr Met Thr Asp Gln Thr Thr Leu Val Pro Asn Glu  
 290 295 300

Glu Glu Ala Phe Ala Leu Glu Pro Ile Asp Ile Thr Val Lys Glu Thr  
 305 310 315 320

Lys Ala Lys Arg Lys Arg Lys Leu Ile Val Asp Ser Val Lys Glu Leu  
 325 330 335

Asp Ser Lys Thr Ile Arg Ala Gln Leu Ser Asp Tyr Ser Asp Ile Val  
 340 345 350

Thr Thr Leu Asp Leu Ala Pro Pro Pro Arg Asn  
 355 360

<210> 923

<211> 296

<212> PRT

<213> Homo sapiens

<400> 923

Val Ala Val Ile Trp Ala Tyr Trp Leu Gly Leu Lys Val Arg Arg Glu  
 1 5 10 15

Tyr Arg Lys Phe Phe Arg Ala Asn Ala Gly Lys Lys Ile Tyr Glu Phe  
 20 25 30

Thr Leu Gln Arg Ile Val Gln Lys Tyr Phe Leu Glu Met Lys Asn Lys  
 35 40 45

Met Pro Ser Leu Ser Pro Ile Asp Lys Asn Trp Pro Ser Arg Pro Tyr  
 50 55 60

Leu Phe Leu Asp Ser Thr His Lys Glu Leu Lys Arg Ile Phe His Leu  
 65 70 75 80

Trp Arg Cys Lys Lys Tyr Arg Asp Gln Phe Thr Asp Gln Gln Lys Leu  
 85 90 95

Ile Tyr Glu Glu Lys Leu Glu Ala Ser Glu Leu Phe Lys Asp Lys Lys  
 100 105 110

Ala Leu Tyr Pro Ser Ser Val Gly Gln Pro Phe Gln Gly Ala Tyr Leu  
 115 120 125

875

Glu Ile Asn Lys Asn Pro Lys Tyr Lys Lys Leu Lys Asp Ala Ile Glu  
 130 135 140  
 Glu Lys Ile Ile Ile Ala Glu Val Val Asn Lys Ile Asn Arg Ala Asn  
 145 150 155 160  
 Gly Lys Ser Thr Ser Arg Ile Phe Leu Leu Thr Asn Asn Asn Leu Leu  
 165 170 175  
 Leu Ala Asp Gln Lys Ser Gly Gln Ile Lys Ser Glu Val Pro Leu Val  
 180 185 190  
 Asp Val Thr Lys Val Ser Met Ser Ser Gln Asn Asp Gly Phe Phe Ala  
 195 200 205  
 Val His Leu Lys Glu Gly Ser Glu Ala Ala Ser Lys Gly Asp Phe Leu  
 210 215 220  
 Phe Ser Ser Asp His Leu Ile Glu Met Ala Thr Lys Leu Tyr Arg Thr  
 225 230 235 240  
 Thr Leu Ser Gln Thr Lys Gln Lys Leu Asn Ile Glu Ile Ser Asp Glu  
 245 250 255  
 Phe Leu Val Gln Phe Arg Gln Asp Lys Val Cys Val Lys Phe Ile Gln  
 260 265 270  
 Gly Asn Gln Lys Asn Gly Ser Val Pro Thr Cys Lys Arg Lys Asn Asn  
 275 280 285  
 Arg Leu Leu Glu Val Ala Val Pro  
 290 295

&lt;210&gt; 924

&lt;211&gt; 91

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 924

His Phe Ser Ile Asn Tyr Asn Gln Lys Ser Asp Leu Leu Lys Glu Lys  
 1 5 10 15  
 Ser Asp Cys Lys Ser Phe Gln Gly Gln Thr Ala Thr Glu Pro Pro Thr  
 20 25 30  
 Pro Lys Gln Glu Thr Leu Val Lys Val Gln Glu Ala Arg Arg Phe Ser  
 35 40 45  
 Pro Thr Lys Val Gln Leu Gly Asn Asp Ala Glu Arg Met Thr Thr Thr

876

50                      55                      60

Cys Asn Ser Arg Lys Met Leu Ala Ser Arg Val Arg Val Thr Ser Glu  
65                      70                      75                      80

Cys His Lys Ser Ser Leu Ser His Cys Leu Ile  
85                      90

&lt;210&gt; 925

&lt;211&gt; 159

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 925

Asn Ser Ala Arg Ala Gly Gly Arg Ala Val Leu Ser Gly Glu Pro Glu  
1                      5                      10                      15

Ala Asn Met Asp Gln Glu Thr Val Gly Asn Val Val Leu Leu Ala Ile  
20                      25                      30

Val Thr Leu Ile Ser Val Val Gln Asn Gly Phe Phe Ala His Lys Val  
35                      40                      45

Glu His Glu Ser Arg Thr Gln Asn Gly Arg Ser Phe Gln Arg Thr Gly  
50                      55                      60

Thr Leu Ala Phe Glu Arg Val Tyr Thr Ala Asn Gln Asn Cys Val Asp  
65                      70                      75                      80

Ala Tyr Pro Thr Phe Leu Ala Val Leu Trp Ser Ala Gly Leu Leu Cys  
85                      90                      95

Ser Gln Val Pro Ala Ala Phe Ala Gly Leu Met Tyr Leu Phe Val Arg  
100                      105                      110

Gln Lys Tyr Phe Val Gly Tyr Leu Gly Glu Arg Thr Gln Ser Thr Pro  
115                      120                      125

Gly Tyr Ile Phe Gly Glu Thr His His Thr Leu Pro Val Pro His Val  
130                      135                      140

Arg Cys Trp His Ile Gln Leu Leu Pro His Leu Leu Phe Arg Lys  
145                      150                      155

&lt;210&gt; 926

&lt;211&gt; 303

&lt;212&gt; PRT

877

&lt;213&gt; Homo sapiens

&lt;400&gt; 926

Gly	Ser	Leu	Ala	Ser	Pro	Pro	Ser	Leu	Gly	Ser	Met	Gly	Glu	Lys	Ser	1	5	10	15
Glu	Asn	Cys	Gly	Val	Pro	Glu	Asp	Leu	Leu	Asn	Gly	Leu	Lys	Val	Thr	20	25	30	
Asp	Thr	Gln	Glu	Ala	Glu	Cys	Ala	Gly	Pro	Pro	Val	Pro	Asp	Pro	Lys	35	40	45	
Asn	Gln	His	Ser	Gln	Ser	Lys	Leu	Leu	Arg	Asp	Asp	Glu	Ala	His	Leu	50	55	60	
Gln	Glu	Asp	Gln	Gly	Glu	Glu	Glu	Cys	Phe	His	Asp	Cys	Ser	Ala	Ser	65	70	75	80
Phe	Glu	Glu	Glu	Pro	Gly	Ala	Asp	Lys	Val	Glu	Asn	Lys	Ser	Asn	Glu	85	90	95	
Asp	Val	Asn	Ser	Ser	Glu	Leu	Asp	Glu	Glu	Tyr	Leu	Ile	Glu	Leu	Glu	100	105	110	
Lys	Asn	Met	Ser	Asp	Glu	Glu	Lys	Gln	Lys	Arg	Arg	Glu	Glu	Ser	Thr	115	120	125	
Arg	Leu	Lys	Glu	Glu	Gly	Asn	Glu	Gln	Phe	Lys	Lys	Gly	Asp	Tyr	Ile	130	135	140	
Glu	Ala	Glu	Ser	Ser	Tyr	Ser	Arg	Ala	Leu	Glu	Met	Cys	Pro	Ser	Cys	145	150	155	160
Phe	Gln	Lys	Glu	Arg	Ser	Ile	Leu	Phe	Ser	Asn	Arg	Ala	Ala	Ala	Arg	165	170	175	
Met	Lys	Gln	Asp	Lys	Lys	Glu	Met	Ala	Ile	Asn	Asp	Cys	Ser	Lys	Ala	180	185	190	
Ile	Gln	Leu	Asn	Pro	Ser	Tyr	Ile	Arg	Ala	Ile	Leu	Arg	Arg	Ala	Glu	195	200	205	
Leu	Tyr	Glu	Lys	Thr	Asp	Lys	Leu	Asp	Glu	Ala	Leu	Glu	Asp	Tyr	Lys	210	215	220	
Ser	Ile	Leu	Glu	Lys	Asp	Pro	Ser	Ile	His	Gln	Ala	Arg	Glu	Ala	Cys	225	230	235	240
Met	Arg	Leu	Pro	Lys	Gln	Ile	Glu	Glu	Arg	Asn	Glu	Arg	Leu	Lys	Glu	245	250	255	

878

Glu Met Leu Gly Lys Leu Lys Asp Leu Gly Asn Leu Val Leu Arg Pro  
                   260                  265                  270

Phe Gly Leu Ser Thr Glu Asn Phe Gln Ile Lys Gln Asp Ser Ser Thr  
                   275                  280                  285

Gly Ser Tyr Ser Ile Asn Phe Val Gln Asn Pro Asn Asn Asn Arg  
                   290                  295                  300

&lt;210&gt; 927

&lt;211&gt; 329

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 927

Xaa Gly Gly Cys Cys Ser Gly Pro Gly His Ser Lys Arg Arg Arg Gln  
   1                  5                  10                  15

Ala Pro Gly Val Gly Ala Val Gly Gly Gly Ser Pro Glu Arg Glu Glu  
                   20                  25                  30

Val Gly Ala Gly Tyr Asn Ser Glu Asp Glu Tyr Glu Ala Ala Ala Ala  
                   35                  40                  45

Arg Ile Glu Ala Met Asp Pro Ala Thr Val Glu Gln Gln Glu His Trp  
                   50                  55                  60

Phe Glu Lys Ala Leu Arg Asp Lys Lys Gly Phe Ile Ile Lys Gln Met  
                   65                  70                  75                  80

Lys Glu Asp Gly Ala Cys Leu Phe Arg Ala Val Ala Asp Gln Val Tyr  
                   85                  90                  95

Gly Asp Gln Asp Met His Glu Val Val Arg Lys His Cys Met Asp Tyr  
                   100                  105                  110

Leu Met Lys Asn Ala Asp Tyr Phe Ser Asn Tyr Val Thr Glu Asp Phe  
                   115                  120                  125

Thr Thr Tyr Ile Asn Arg Lys Arg Lys Asn Asn Cys His Gly Asn His  
                   130                  135                  140

Ile Glu Met Gln Ala Met Ala Glu Met Tyr Asn Arg Pro Val Glu Val  
                   145                  150                  155                  160

879

Tyr Gln Tyr Ser Thr Glu Pro Ile Asn Thr Phe His Gly Ile His Gln  
                   165                  170                  175  
 Asn Glu Asp Glu Pro Ile Arg Val Ser Tyr His Arg Asn Ile His Tyr  
                   180                  185                  190  
 Asn Ser Val Val Asn Pro Asn Lys Ala Thr Ile Gly Val Gly Leu Gly  
                   195                  200                  205  
 Leu Pro Ser Phe Lys Pro Gly Phe Ala Glu Gln Ser Leu Met Lys Asn  
                   210                  215                  220  
 Ala Ile Lys Thr Ser Glu Glu Ser Trp Ile Glu Gln Gln Met Leu Glu  
                   225                  230                  235                  240  
 Asp Lys Lys Arg Ala Thr Asp Trp Glu Ala Thr Asn Glu Ala Ile Glu  
                   245                  250                  255  
 Glu Gln Val Ala Arg Glu Ser Tyr Leu Gln Trp Leu Arg Asp Gln Glu  
                   260                  265                  270  
 Lys Gln Ala Arg Gln Val Arg Gly Pro Ser Gln Pro Arg Lys Ala Ser  
                   275                  280                  285  
 Ala Thr Cys Ser Ser Ala Thr Ala Ala Ala Ser Ser Gly Leu Glu Glu  
                   290                  295                  300  
 Trp Thr Ser Arg Ser Pro Arg Gln Glu Phe Gln Pro Arg His Leu Ser  
                   305                  310                  315                  320  
 Thr Leu Ser Cys Met Leu Asn Trp Ala  
                   325

&lt;210&gt; 928

&lt;211&gt; 436

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (210)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (217)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

880

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (262)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 928

Lys Arg Phe Leu Arg Asn Phe Lys Leu Leu Thr Lys Arg Glu Phe Trp  
 1 5 10 15

Lys Glu Asn Gln Glu His Tyr His Ile Val Gln Lys Phe Leu Ile Leu  
 20 25 30

Gly Asp Ile Asp Gly Leu Met Asp Glu Phe Ser Lys Trp Leu Ser Lys  
 35 40 45

Ser Arg Asn Asn Leu Pro Gly His Leu Leu Arg Phe Met Thr His Leu  
 50 55 60

Ile Leu Phe Phe Arg Thr Leu Gly Leu Gln Thr Lys Glu Glu Val Ser  
 65 70 75 80

Ile Glu Val Leu Lys Thr Tyr Ile Gln Leu Leu Ile Arg Glu Lys His  
 85 90 95

Thr Asn Leu Ile Ala Phe Tyr Thr Cys His Leu Pro Gln Asp Leu Ala  
 100 105 110

Val Ala Gln Tyr Ala Leu Phe Leu Glu Ser Val Thr Glu Phe Glu Gln  
 115 120 125

Arg His His Cys Leu Glu Leu Ala Lys Glu Ala Asp Leu Asp Val Ala  
 130 135 140

Thr Ile Thr Lys Thr Val Val Glu Asn Ile Arg Lys Lys Asp Asn Gly  
 145 150 155 160

Glu Phe Ser His His Asp Leu Ala Pro Ala Leu Asp Thr Gly Thr Thr  
 165 170 175

Glu Glu Asp Arg Leu Lys Ile Asp Val Ile Asp Trp Leu Val Phe Asp  
 180 185 190

Pro Ala Gln Arg Ala Glu Ala Leu Lys Gln Gly Asn Ala Ile Met Arg  
 195 200 205

Lys Xaa Leu Ala Ser Lys Lys His Xaa Ala Ala Lys Glu Val Phe Val  
 210 215 220

Lys Ile Pro Gln Asp Ser Ile Ala Glu Ile Tyr Asn Gln Cys Glu Glu  
 225 230 235 240

881

Gln	Gly	Met	Glu	Ser	Pro	Leu	Pro	Ala	Glu	Asp	Asp	Asn	Ala	Ile	Arg		
				245					250					255			
Glu	His	Leu	Cys	Ile	Xaa	Ala	Tyr	Leu	Glu	Ala	His	Glu	Thr	Phe	Asn		
				260					265					270			
Glu	Trp	Phe	Lys	His	Met	Asn	Ser	Val	Pro	Gln	Lys	Pro	Ala	Leu	Ile		
				275					280					285			
Pro	Gln	Pro	Thr	Phe	Thr	Glu	Lys	Val	Ala	His	Glu	His	Lys	Glu	Lys		
				290					295					300			
Lys	Tyr	Glu	Met	Asp	Phe	Gly	Ile	Trp	Lys	Gly	His	Leu	Asp	Ala	Leu		
305					310					315					320		
Thr	Ala	Asp	Val	Lys	Glu	Lys	Met	Tyr	Asn	Val	Leu	Leu	Phe	Val	Asp		
				325					330					335			
Gly	Gly	Trp	Met	Val	Asp	Val	Arg	Glu	Asp	Ala	Lys	Glu	Asp	His	Glu		
				340					345					350			
Arg	Thr	His	Gln	Met	Val	Leu	Leu	Arg	Lys	Leu	Cys	Leu	Pro	Met	Leu		
				355					360					365			
Cys	Phe	Leu	Leu	His	Thr	Ile	Leu	His	Ser	Thr	Gly	Gln	Tyr	Gln	Glu		
				370					375					380			
Cys	Leu	Gln	Leu	Ala	Asp	Met	Val	Ser	Ser	Glu	Arg	His	Lys	Leu	Tyr		
				385					390					395			
Leu	Val	Phe	Ser	Lys	Glu	Glu	Leu	Arg	Lys	Leu	Leu	Gln	Lys	Leu	Arg		
				405					410					415			
Glu	Ser	Ser	Leu	Met	Leu	Leu	Asp	Gln	Gly	Leu	Asp	Pro	Leu	Gly	Tyr		
				420					425					430			
Glu	Ile	Gln	Leu														
				435													



882

&lt;400&gt; 929

Asp Ala Asp Val Gln Phe Leu Ala Ser Val Leu Pro Pro Asp Thr Asp  
 1 5 10 15

Pro Ala Phe Phe Glu His Leu Arg Ala Leu Asp Cys Ser Glu Val Thr  
 20 25 30

Val Arg Ala Leu Pro Glu Gly Ser Leu Ala Phe Pro Gly Val Pro Leu  
 35 40 45

Leu Gln Val Ser Gly Pro Leu Leu Val Val Gln Leu Leu Glu Thr Pro  
 50 55 60

Leu Leu Cys Leu Val Ser Tyr Ala Ser Leu Val Ala Thr Asn Ala Ala  
 65 70 75 80

Arg Leu Arg Leu Ile Ala Gly Pro Glu Lys Arg Leu Leu Glu Met Gly  
 85 90 95

Leu Arg Arg Ala Gln Gly Pro Asp Gly Gly Leu Thr Ala Ser Thr Tyr  
 100 105 110

Ser Tyr Leu Gly Gly Phe Asp Ser Ser Ser Asn Val Leu Ala Gly Gln  
 115 120 125

Leu Arg Gly Val Pro Val Ala Gly Thr Leu Ala His Ser Phe Val Thr  
 130 135 140

Ser Phe Ser Gly Ser Glu Val Pro Leu Thr Arg Cys Trp Gly Xaa Ser  
 145 150 155 160

Leu

&lt;210&gt; 930

&lt;211&gt; 741

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

883

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (282)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 930

Leu	Met	Lys	Ile	Glu	Ala	Asn	Xaa	Asp	His	Met	Gly	Phe	His	Phe	Thr
1				5					10					15	
Thr	Gly	Xaa	Pro	Ala	Pro	Ser	Thr	Glu	Thr	Glu	Leu	Asp	Val	Leu	Leu
			20					25					30		
Pro	Thr	Ala	Thr	Ser	Leu	Pro	Ile	Pro	Arg	Lys	Ser	Ala	Thr	Val	Ile
		35					40					45			
Pro	Glu	Ile	Glu	Gly	Ile	Lys	Ala	Glu	Ala	Lys	Ala	Leu	Asp	Asp	Met
	50					55					60				
Phe	Glu	Ser	Ser	Thr	Leu	Ser	Asp	Gly	Gln	Ala	Ile	Ala	Asp	Gln	Ser
65					70					75				80	
Glu	Ile	Ile	Pro	Thr	Leu	Gly	Gln	Phe	Glu	Arg	Thr	Gln	Glu	Glu	Tyr
				85					90					95	
Glu	Asp	Lys	Lys	His	Ala	Gly	Pro	Ser	Phe	Gln	Pro	Glu	Phe	Ser	Ser
		100						105					110		
Gly	Ala	Glu	Glu	Ala	Leu	Val	Asp	His	Thr	Pro	Tyr	Leu	Ser	Ile	Ala
	115						120					125			
Thr	Thr	His	Leu	Met	Asp	Gln	Ser	Val	Thr	Glu	Val	Pro	Asp	Val	Met
	130					135						140			
Glu	Gly	Ser	Asn	Pro	Pro	Tyr	Tyr	Thr	Asp	Thr	Thr	Leu	Ala	Val	Ser
145				150					155					160	
Thr	Phe	Ala	Lys	Leu	Ser	Ser	Gln	Thr	Pro	Ser	Ser	Pro	Leu	Thr	Ile
			165						170					175	
Tyr	Ser	Gly	Ser	Glu	Ala	Ser	Gly	His	Thr	Glu	Ile	Pro	Gln	Pro	Ser
		180						185					190		
Ala	Leu	Pro	Gly	Ile	Asp	Val	Gly	Ser	Ser	Val	Met	Ser	Pro	Gln	Asp
	195						200					205			
Ser	Phe	Lys	Glu	Ile	His	Val	Asn	Ile	Glu	Ala	Thr	Phe	Lys	Pro	Ser
	210					215					220				
Ser	Glu	Glu	Tyr	Leu	His	Ile	Thr	Glu	Pro	Pro	Ser	Leu	Ser	Pro	Asp
225				230					235					240	

884

Thr	Lys	Leu	Glu	Pro	Ser	Glu	Asp	Asp	Gly	Lys	Pro	Glu	Leu	Leu	Glu	245	250	255	
Glu	Met	Glu	Ala	Ser	Pro	Thr	Glu	Leu	Ile	Ala	Val	Glu	Gly	Thr	Glu	260	265	270	
Ile	Leu	Gln	Asp	Phe	Gln	Asn	Lys	Thr	Xaa	Gly	Gln	Val	Ser	Gly	Glu	275	280	285	
Ala	Ile	Lys	Met	Phe	Pro	Thr	Ile	Lys	Thr	Pro	Glu	Ala	Gly	Thr	Val	290	295	300	
Ile	Thr	Thr	Ala	Asp	Glu	Ile	Glu	Leu	Glu	Gly	Ala	Thr	Gln	Trp	Pro	305	310	315	320
His	Ser	Thr	Ser	Ala	Ser	Ala	Thr	Tyr	Gly	Val	Glu	Ala	Gly	Val	Val	325	330	335	
Pro	Trp	Leu	Ser	Pro	Gln	Thr	Ser	Glu	Arg	Pro	Thr	Leu	Ser	Ser	Ser	340	345	350	
Pro	Glu	Ile	Asn	Pro	Glu	Thr	Gln	Ala	Ala	Leu	Ile	Arg	Gly	Gln	Asp	355	360	365	
Ser	Thr	Ile	Ala	Ala	Ser	Glu	Gln	Gln	Val	Ala	Ala	Arg	Ile	Leu	Asp	370	375	380	
Ser	Asn	Asp	Gln	Ala	Thr	Val	Asn	Pro	Val	Glu	Phe	Asn	Thr	Glu	Val	385	390	395	400
Ala	Thr	Pro	Pro	Phe	Ser	Leu	Leu	Glu	Thr	Ser	Asn	Glu	Thr	Asp	Phe	405	410	415	
Leu	Ile	Gly	Ile	Asn	Glu	Glu	Ser	Val	Glu	Gly	Thr	Ala	Ile	Tyr	Leu	420	425	430	
Pro	Gly	Pro	Asp	Arg	Cys	Lys	Met	Asn	Pro	Cys	Leu	Asn	Gly	Gly	Thr	435	440	445	
Cys	Tyr	Pro	Thr	Glu	Thr	Ser	Tyr	Val	Cys	Thr	Cys	Val	Pro	Gly	Tyr	450	455	460	
Ser	Gly	Asp	Gln	Cys	Glu	Leu	Asp	Phe	Asp	Glu	Cys	His	Ser	Asn	Pro	465	470	475	480
Cys	Arg	Asn	Gly	Ala	Thr	Cys	Val	Asp	Gly	Phe	Asn	Thr	Phe	Arg	Cys	485	490	495	
Leu	Cys	Leu	Pro	Ser	Tyr	Val	Gly	Ala	Leu	Cys	Glu	Gln	Asp	Thr	Glu	500	505	510	

885

Thr Cys Asp Tyr Gly Trp His Lys Phe Gln Gly Gln Cys Tyr Lys Tyr  
 515 520 525  
 Phe Ala His Arg Arg Thr Trp Asp Ala Ala Glu Arg Glu Cys Arg Leu  
 530 535 540  
 Gln Gly Ala His Leu Thr Ser Ile Leu Ser His Glu Glu Gln Met Phe  
 545 550 555 560  
 Val Asn Arg Val Gly His Asp Tyr Gln Trp Ile Gly Leu Asn Asp Lys  
 565 570 575  
 Met Phe Glu His Asp Phe Arg Trp Thr Asp Gly Ser Thr Leu Gln Tyr  
 580 585 590  
 Glu Asn Trp Arg Pro Asn Gln Pro Asp Ser Phe Phe Ser Ala Gly Glu  
 595 600 605  
 Asp Cys Val Val Ile Ile Trp His Glu Asn Gly Gln Trp Asn Asp Val  
 610 615 620  
 Pro Cys Asn Tyr His Leu Thr Tyr Thr Cys Lys Lys Gly Thr Val Ala  
 625 630 635 640  
 Cys Gly Gln Pro Pro Val Val Glu Asn Ala Lys Thr Phe Gly Lys Met  
 645 650 655  
 Lys Pro Arg Tyr Glu Ile Asn Ser Leu Ile Arg Tyr His Cys Lys Asp  
 660 665 670  
 Gly Phe Ile Gln Arg His Leu Pro Thr Ile Arg Cys Leu Gly Asn Gly  
 675 680 685  
 Arg Trp Ala Ile Pro Lys Ile Thr Cys Met Asn Pro Ser Ala Tyr Gln  
 690 695 700  
 Arg Thr Tyr Ser Met Lys Tyr Phe Lys Asn Ser Ser Ser Ala Lys Asp  
 705 710 715 720  
 Asn Ser Ile Asn Thr Ser Lys His Asp His Arg Trp Ser Arg Arg Trp  
 725 730 735  
 Gln Glu Ser Arg Arg  
 740

&lt;210&gt; 931

&lt;211&gt; 209

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

**<220>**

<221> SITE

<222> (28)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 931

Gly Lys Ala Gly Asp Gln Leu Val Pro Asp Asn Leu Lys Glu Thr Asp  
1 5 10 15

Lys Glu Lys Gly Asn Val Val Leu Lys Gly Glu Xaa Ser Ala Arg Met  
20 25 30

Lys Ile Pro Ser Asn Met Trp Val Glu Ala Trp Glu Thr Ala Lys Pro  
35 40 45

Ile Pro Ala Arg Arg Gln Arg Arg Leu Phe Asp Asp Thr Arg Glu Ala  
50 55 60

Glu Lys Val Leu His Tyr Leu Ala Ile Gln Lys Pro Ala Asp Leu Ala  
65 70 75 80

Arg His Leu Leu Pro Cys Val Ile His Ala Ala Val Leu Lys Val Lys  
85 90 95

Glu Glu Glu Ser Leu Glu Asn Ile Ser Ser Val Lys Lys Ile Ile Lys  
100 105 110

Gln Ile Ile Ser His Ser Ser Lys Val Leu His Phe Pro Asn Pro Glu  
115 120 125

Asp Lys Lys Leu Glu Glu Ile Ile His Gln Ile Thr Asn Val Glu Ala  
130 135 140

Leu Ile Ala Arg Ala Arg Ser Leu Lys Ala Lys Phe Gly Thr Glu Lys  
145 150 155 160

Cys Glu Gln Glu Glu Glu Lys Glu Asp Leu Glu Arg Phe Val Ser Cys  
165 170 175

Leu Leu Glu Gln Pro Glu Val Leu Val Thr Gly Ala Gly Arg Gly His  
180 185 190

Ala Gly Arg Ile Ile His Lys Leu Phe Val Asn Ala Gln Arg Cys Gln  
195 200 205

Leu

887

&lt;210&gt; 932

&lt;211&gt; 57

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 932

Leu Leu Glu Val Pro Glu Met Gly Leu Thr Phe Ile Lys Gln Ile Ala  
 1 5 10 15

Tyr Tyr Asp Leu Ala Ala Ala Thr Val Gln Leu His Ile Asn Ser Thr  
 20 25 30

Asp Gln Thr Ile Cys Ile Trp His His Leu Leu Thr His Asp Met Arg  
 35 40 45

Leu Phe Cys Ile Asn Cys Tyr Asp Gly  
 50 55

&lt;210&gt; 933

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 933

Ile Lys Glu Glu Ser Asp Tyr His Asp Leu Glu Ser Val Val Gln Gln  
 1 5 10 15

Val Glu Gln Asn Leu Glu Leu Met Thr Lys Arg Ala Val Lys Ala Glu  
 20 25 30

Asn His Val Val Lys Leu Lys Gln Glu Ile Ser Leu Leu Gln Ala Gln  
 35 40 45

Val Ser Asn Phe Gln Arg Glu Asn Glu Ala Leu Arg Cys Gly Gln Gly  
 50 55 60

Ala Ser Leu Thr Val Val Lys Gln Asn Ala Asp Val Ala Leu Gln Asn  
 65 70 75 80

Leu Arg Val Val Met Asn Ser Ala Gln Ala Ser Ile Lys Gln Leu Val  
 85 90 95

Ser Gly Ala Glu Thr Leu Asn Leu Val Ala Glu Ile Leu Lys Ser Ile  
 100 105 110

Asp Arg Ile Ser Glu Val Lys Asp Glu Glu Glu Asp Ser  
 115 120 125

888

<210> 934  
 <211> 306  
 <212> PRT  
 <213> Homo sapiens

<400> 934

Pro Thr Phe Ser Arg Ala Val Ala Thr Met Phe Ser Arg Ala Gly Val  
 1 5 10 15

Ala Gly Leu Ser Ala Trp Thr Leu Gln Pro Gln Trp Ile Gln Val Arg  
 20 25 30

Asn Met Ala Thr Leu Lys Asp Ile Thr Arg Arg Leu Lys Ser Ile Lys  
 35 40 45

Asn Ile Gln Lys Ile Thr Lys Ser Met Lys Met Val Ala Ala Ala Lys  
 50 55 60

Tyr Ala Arg Ala Glu Arg Glu Leu Lys Pro Ala Arg Ile Tyr Gly Leu  
 65 70 75 80

Gly Ser Leu Ala Leu Tyr Glu Lys Ala Asp Ile Lys Gly Pro Glu Asp  
 85 90 95

Lys Lys Lys His Leu Leu Ile Gly Val Ser Ser Asp Arg Gly Leu Cys  
 100 105 110

Gly Ala Ile His Ser Ser Ile Ala Lys Gln Met Lys Ser Glu Val Ala  
 115 120 125

Thr Leu Thr Ala Ala Gly Lys Glu Val Met Leu Val Gly Ile Gly Asp  
 130 135 140

Lys Ile Arg Gly Ile Leu Tyr Arg Thr His Ser Asp Gln Phe Leu Val  
 145 150 155 160

Ala Phe Lys Glu Val Gly Arg Lys Pro Pro Thr Phe Gly Asp Ala Ser  
 165 170 175

Val Ile Ala Leu Glu Leu Leu Asn Ser Gly Tyr Glu Phe Asp Glu Gly  
 180 185 190

Ser Ile Ile Phe Asn Lys Phe Arg Ser Val Ile Ser Tyr Lys Thr Glu  
 195 200 205

Glu Lys Pro Ile Phe Ser Leu Asn Thr Val Ala Ser Ala Asp Ser Met  
 210 215 220

Ser Ile Tyr Asp Asp Ile Asp Ala Asp Val Leu Gln Asn Tyr Gln Glu  
 225 230 235 240

889

Tyr Asn Leu Ala Asn Ile Ile Tyr Tyr Ser Leu Lys Glu Ser Thr Thr  
245 250 255

Ser Glu Gln Ser Ala Arg Met Thr Ala Met Asp Asn Ala Ser Lys Asn  
260 265 270

Ala Ser Glu Met Ile Asp Lys Leu Thr Leu Thr Phe Asn Arg Thr Arg  
275 280 285

Gln Ala Val Ile Thr Lys Glu Leu Ile Glu Ile Ile Ser Gly Ala Ala  
290 295 300

Ala Leu  
305

```
<210> 935
<211> 135
<212> PRT
<213> Homo sapiens
```

<400> 935  
Gly Ala Leu Cys Ala Ala Ser Val Pro Arg Cys Val Trp Ser Ser Ala  
1 5 10 15

Gly Val Val Ala Leu Phe Glu Glu His Cys Ala Pro Leu Val Trp Val  
20 25 30

Tyr Thr Tyr Glu Cys Cys His Tyr Met Cys Ser Ala Leu Leu Ser Leu  
35 40 45

Ser Cys Pro Cys Pro Ala Pro Ser Glu Arg Ala Ala Gly Leu Cys Cys  
50 55 60

Arg Leu Val Val Pro Cys His Lys Gly Met Pro Arg Leu Thr Asp Leu  
65 70 75 80

Ser Val Lys Thr Lys Asp Val Trp Glu Ile Pro Arg Glu Ser Leu Gln  
85 90 95

Leu Ile Lys Arg Leu Gly Asn Gly Gln Phe Gly Glu Val Trp Met Gly  
100 105 110

Met Leu Arg Leu Asn Tyr Ser Leu Ile Ser Phe Pro Val Trp Lys Ile  
115 120 125

Pro Asn Thr Lys Asp Gly Arg  
130 135



890

&lt;210&gt; 936

&lt;211&gt; 284

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 936

Leu Ser Gly Thr Thr Tyr Ala Arg Ala Cys Arg Ser Gln Cys Ala Ser  
 1 5 10 15

Ala Ala Gly Gly Cys Thr Gly Gly Ala Gly Gly Gly Gly Gly Gly Gly  
 20 25 30

Gly Gly Trp Gly Gly Ala Gly Gly Lys Cys Cys Asp Ala Val Pro Gly  
 35 40 45

Arg Gly Arg Arg Val Glu Ala Glu Tyr Gln Phe Pro Ser Gly Lys Ala  
 50 55 60

Ala Met Ala Ile Phe Ser Val Tyr Val Val Asn Lys Ala Gly Gly Leu  
 65 70 75 80

Ile Tyr Gln Leu Asp Ser Tyr Ala Pro Arg Ala Glu Ala Glu Lys Thr  
 85 90 95

Phe Ser Tyr Pro Leu Asp Leu Leu Leu Lys Leu His Asp Glu Arg Val  
 100 105 110

Leu Val Ala Phe Gly Gln Arg Asp Gly Ile Arg Val Gly His Ala Val  
 115 120 125

Leu Ala Ile Asn Gly Met Asp Val Asn Gly Arg Tyr Thr Ala Asp Gly  
 130 135 140

Lys Glu Val Leu Glu Tyr Leu Gly Asn Pro Ala Asn Tyr Pro Val Ser  
 145 150 155 160

Ile Arg Phe Gly Arg Pro Arg Leu Thr Ser Asn Glu Lys Leu Met Leu  
 165 170 175

Ala Ser Met Phe His Ser Leu Phe Ala Ile Gly Ser Gln Leu Ser Pro  
 180 185 190

Glu Gln Gly Ser Ser Gly Ile Glu Met Leu Glu Thr Asp Thr Phe Lys  
 195 200 205

Leu His Cys Tyr Gln Thr Leu Thr Gly Ile Lys Phe Val Val Leu Ala  
 210 215 220

Asp Pro Arg Gln Ala Gly Ile Asp Ser Leu Leu Arg Lys Ile Tyr Glu

891

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225                230                235                240
Ile Tyr Ser Asp Phe Ala Leu Lys Asn Pro Phe Tyr Ser Leu Glu Met
                245                250                255
Pro Ile Arg Cys Glu Leu Phe Asp Gln Asn Leu Lys Leu Ala Leu Glu
                260                265                270
Val Ala Glu Lys Ala Gly Thr Phe Gly Pro Gly Ser
                275                280

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<210> 937
<211> 338
<212> PRT
<213> Homo sapiens
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<400> 937
Pro Val Ser Pro Leu His Arg Glu Glu Gly Asp Lys Trp Gly Glu Val
  1              5              10              15
Trp Cys Gln Met Gly Trp Arg Arg Lys Arg Val Pro Gln Arg Gly Arg
      20              25              30
Lys Ala Pro Pro Gln Leu His Gly Asn Ile Asn Asn Leu Tyr Phe
      35              40              45
Pro Ile Arg Trp Arg Asp Arg Leu His Trp Asp Ser Pro Asn Pro Ala
  50              55              60
Ala Glu Cys Gln Arg Pro Arg Ser Thr Leu Val Ser Arg Lys Pro Gly
  65              70              75              80
Pro Gly Arg Ile Thr Trp Asp Glu Leu Ala Ala Ser Gly Leu Pro Ser
      85              90              95
Cys Asp Ala Ala Val Asn Leu Ala Gly Glu Asn Ile Leu Asn Pro Leu
      100             105             110
Arg Arg Trp Asn Glu Thr Phe Gln Lys Glu Val Leu Gly Ser Arg Leu
      115             120             125
Glu Thr Thr Gln Leu Leu Ala Lys Ala Ile Thr Lys Ala Pro Gln Pro
      130             135             140
Pro Lys Ala Trp Val Leu Val Thr Gly Val Ala Tyr Tyr Gln Pro Ser
  145             150             155             160
Leu Thr Ala Glu Tyr Asp Glu Asp Ser Pro Gly Gly Asp Phe Asp Phe
      165             170             175

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892

Phe Ser Asn Leu Val Thr Lys Trp Glu Ala Ala Ala Arg Leu Pro Gly  
180 185 190

Asp Ser Thr Arg Gln Val Val Val Arg Ser Gly Val Val Leu Gly Arg  
195 200 205

Gly Gly Gly Ala Met Gly His Met Leu Leu Pro Phe Arg Leu Gly Leu  
210 215 220

Gly Gly Pro Ile Gly Ser Gly His Gln Phe Phe Pro Trp Ile His Ile  
225 230 235 240

Gly Asp Leu Ala Gly Ile Leu Thr His Ala Leu Glu Ala Asn His Val  
245 250 255

His Gly Val Leu Asn Gly Val Ala Pro Ser Ser Ala Thr Asn Ala Glu  
260 265 270

Phe Ala Gln Thr Phe Gly Ala Ala Leu Gly Arg Arg Ala Phe Ile Pro  
275 280 285

Leu Pro Ser Ala Val Val Gln Ala Val Phe Gly Arg Gln Arg Ala Ile  
290 295 300

Met Leu Leu Glu Gly Gln Lys Val Ile Pro Arg Arg Thr Leu Ala Thr  
305 310 315 320

Gly Tyr Gln Tyr Ser Phe Pro Glu Leu Gly Ala Ala Leu Lys Glu Ile  
325 330 335

Val Ala

&lt;210&gt; 938

&lt;211&gt; 321

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (164)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (220)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (221)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (238)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (263)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (267)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (268)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 938

Cys	Gln	Glu	Trp	Val	Pro	Asp	Arg	Glu	Ser	Tyr	Val	Ser	His	Met	Lys
1				5				10						15	

Lys	Ser	His	Gly	Arg	Thr	Leu	Lys	Arg	Tyr	Pro	Cys	Arg	Gln	Xaa	Glu
			20				25						30		

Gln	Ser	Phe	His	Thr	Pro	Asn	Ser	Leu	Arg	Lys	His	Ile	Arg	Asn	Asn
		35					40					45			

His	Asp	Thr	Val	Lys	Lys	Phe	Tyr	Thr	Cys	Gly	Tyr	Cys	Thr	Glu	Asp
	50					55					60				

Ser	Pro	Ser	Phe	Pro	Arg	Pro	Ser	Leu	Leu	Glu	Ser	His	Ile	Ser	Leu
65					70					75				80	

Met	His	Gly	Ile	Arg	Asn	Pro	Asp	Leu	Ser	Gln	Thr	Ser	Lys	Val	Lys
			85					90						95	

Pro	Pro	Gly	Gly	His	Ser	Pro	Gln	Val	Asn	His	Leu	Lys	Arg	Pro	Val
			100					105						110	

894

Ser Gly Val Gly Asp Ala Pro Gly Thr Ser Asn Gly Ala Thr Val Ser  
           115                          120                          125  
 Ser Thr Lys Arg His Lys Ser Leu Phe Gln Cys Ala Lys Cys Ser Phe  
           130                          135                          140  
 Ala Thr Asp Ser Gly Leu Glu Phe Gln Ser His Ile Pro Gln His Gln  
           145                          150                          155                          160  
 Val Gly Gln Xaa His Ser Pro Met Ser Pro Leu Trp Phe Val Leu His  
                           165                          170                          175  
 Leu Cys Gln Leu Pro Gln Pro Pro Pro Leu His Cys Pro Gln Gly Glu  
                           180                          185                          190  
 Arg Pro Gly Gly Gly Gly Gly Arg Gly Gly Gly Gly Thr Glu Met Ala  
           195                          200                          205  
 Val Glu Val Ala Glu Gln Arg Arg Ala Pro Gly Xaa Xaa Cys Pro Trp  
           210                          215                          220  
 Arg Leu Glu Arg Met Asp Trp Lys Asn Val Pro Val Ser Xaa Cys Gln  
           225                          230                          235                          240  
 Leu Thr Gln Arg Arg Gly Asp Cys Trp Ala Arg Pro Leu Arg Thr Met  
                           245                          250                          255  
 Val Ala Thr Met Ile Thr Xaa Asn His Arg Xaa Xaa Arg Thr Arg Thr  
                           260                          265                          270  
 Ala Thr His Cys Pro Leu Arg Cys Asp Arg Arg Leu Cys Ser Val His  
           275                          280                          285  
 Gly Gln Gly Trp Cys Arg Ser Val Phe His Leu Pro Cys Gly Pro Trp  
           290                          295                          300  
 Lys Ile Lys Gly Ser Ala Pro Ser Val Ser Val Thr Gly Cys Thr Leu  
           305                          310                          315                          320  
 Glu

&lt;210&gt; 939

&lt;211&gt; 151

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

<221> SITE  
 <222> (4)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (44)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (67)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (71)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (81)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (103)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 939  
 Ala Ala Ser Xaa Gly Glu Gln Arg Glu Arg Ala Arg Leu Gln Thr Pro  
     1                    5                    10                    15  
 Thr Arg Pro His Ser Thr Ser Ala Arg Pro Arg Arg Arg Gln Val Gln  
                     20                    25                    30  
 Leu Leu Gln Leu Cys Gly Cys Ala Ala Lys Gly Xaa Ala His Gly Leu  
                     35                    40                    45  
 Asp Val Thr Ser Pro Thr Val Ser Trp Leu Ala Cys Pro Cys Ala Arg  
                     50                    55                    60  
 Pro Ser Xaa Ser Arg Gln Xaa Leu Gly Thr Ser Glu Glu Glu Pro Gly  
     65                    70                    75                    80  
 Xaa Asn Gly Lys Gly Gly Ile Gly Val His His Ser Leu Leu Leu Trp  
                     85                    90                    95  
 Ser Ser Thr Gly Gly Thr Xaa Met Glu Val Ser Cys Leu Thr Ser Leu  
                     100                    105                    110

896

His Cys Thr Gly Pro Gly Met Pro Ile His Pro Leu Ala Glu Asp Thr  
 115 120 125

His Gln Val Ile Cys Glu Glu Thr Leu Gly Ser His His Leu Lys Ala  
 130 135 140

Arg Gly Ser Pro Ser His Arg  
 145 150

<210> 940  
 <211> 103  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (103)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 940  
 Arg Cys Gly Trp Ser Ser Arg Ser Arg Arg Ser Arg Cys Ala Arg Arg  
 1 5 10 15

Cys Pro Pro Ser Pro Cys Pro Thr Pro Arg His Val Pro Ser Ser Arg  
 20 25 30

His Pro Glu Val Cys Gly Leu Arg Thr Asn Ser His Arg Cys Leu Phe  
 35 40 45

Arg Pro Gln Leu Gln Ala Met Pro Ala Ala Gly Gly Val Leu Tyr Gln  
 50 55 60

Pro Ser Gly Pro Ala Ser Phe Pro Ser Thr Phe Ser Pro Ala Gly Ser  
 65 70 75 80

Val Glu Gly Ser Pro Met His Gly Val Tyr Met Ser Gln Pro Val Pro  
 85 90 95

Ala Ala Gly Pro Tyr Pro Xaa  
 100

<210> 941  
 <211> 136  
 <212> PRT  
 <213> Homo sapiens

<220>

897

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 941

Thr Ala Gly Arg Ser Asp Val Leu Pro Val Ala Gly Gly Glu Val Arg  
 1 5 10 15

Ala Leu Gln Glu Gly Gly Cys Gly Asp Lys Met Lys Ile Phe Val Gly  
 20 25 30

Asn Val Asp Gly Ala Asp Thr Thr Pro Glu Glu Leu Ala Ala Leu Phe  
 35 40 45

Ala Pro Tyr Gly Thr Val Met Ser Cys Ala Val Met Lys Gln Phe Ala  
 50 55 60

Phe Val His Met Arg Glu Asn Ala Gly Ala Leu Arg Ala Ile Glu Ala  
 65 70 75 80

Leu His Gly His Glu Leu Arg Pro Gly Arg Ala Leu Val Val Glu Met  
 85 90 95

Ser Arg Pro Arg Pro Leu Asn Thr Trp Lys Ile Phe Val Gly Asn Val  
 100 105 110

Ser Ala Ala Cys Thr Ser Gln Glu Leu Arg Xaa Ser Ser Ser Ala Ala  
 115 120 125

Asp Ala Ser Ser Ser Val Thr Trp  
 130 135

&lt;210&gt; 942

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 942

Ile Met Lys Glu Ser Ser Ser Val Leu Ala Lys Cys Ser Ser Ile Ala  
 1 5 10 15

Gly Tyr Ile Gln Trp Ser Ser Ile Asn Ser Tyr Leu Ser Gly Leu Asn  
 20 25 30

Gln Asn Cys Val Ser Leu Asn Ser Tyr His Thr Glu Gly Ala Ser Gln  
 35 40 45

Ile Thr Ile Phe Leu Ser Ala Val Phe Leu Gln Lys Ser  
 50 55 60



<210> 943  
 <211> 580  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (52)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (73)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 943  
 Gly Ala Gln Ala Gln Ala Ser Ala Arg Pro Leu Gln Ala Phe Gly Ala  
     1                    5                    10                    15  
 Arg Ala Arg Leu Gly Tyr Gly Pro Gly Arg Arg Arg Pro Pro Ser Ala  
                     20                    25                    30  
 Arg Cys Leu Ser Gly Thr Ala Asn Arg Arg Glu Arg Arg Arg Val Gly  
             35                    40                    45  
 Leu Ser Ala Xaa Leu Gly Ala Gly Ala His Ala Arg Ala Pro Pro Gln  
     50                    55                    60  
 Ala Gly Ala Met Ala Ser Gly Ser Xaa Ala Glu Cys Leu Gln Gln Glu  
     65                    70                    75                    80  
 Thr Thr Cys Pro Val Cys Leu Gln Tyr Phe Ala Glu Pro Met Met Leu  
                     85                    90                    95  
 Asp Cys Gly His Asn Ile Cys Cys Ala Cys Leu Ala Arg Cys Trp Gly  
                     100                    105                    110  
 Thr Ala Glu Thr Asn Val Ser Cys Pro Gln Cys Arg Glu Thr Phe Pro  
             115                    120                    125  
 Gln Arg His Met Arg Pro Asn Arg His Leu Ala Asn Val Thr Gln Leu  
     130                    135                    140  
 Val Lys Gln Leu Arg Thr Glu Arg Pro Ser Gly Pro Gly Gly Glu Met  
     145                    150                    155                    160  
 Gly Val Cys Glu Lys His Arg Glu Pro Leu Lys Leu Tyr Cys Glu Glu  
             165                    170                    175

Asp	Gln	Met	Pro	Ile	Cys	Val	Val	Cys	Asp	Arg	Ser	Arg	Glu	His	Arg	180	185	190	
Gly	His	Ser	Val	Leu	Pro	Leu	Glu	Glu	Ala	Val	Glu	Gly	Phe	Lys	Glu	195	200	205	
Gln	Ile	Gln	Asn	Gln	Leu	Asp	His	Leu	Lys	Arg	Val	Lys	Asp	Leu	Lys	210	215	220	
Lys	Arg	Arg	Arg	Ala	Gln	Gly	Glu	Gln	Ala	Arg	Ala	Glu	Leu	Leu	Ser	225	230	235	240
Leu	Thr	Gln	Met	Glu	Arg	Glu	Lys	Ile	Val	Trp	Glu	Phe	Glu	Gln	Leu	245	250	255	
Tyr	His	Ser	Leu	Lys	Glu	His	Glu	Tyr	Arg	Leu	Leu	Ala	Arg	Leu	Glu	260	265	270	
Glu	Leu	Asp	Leu	Ala	Ile	Tyr	Asn	Ser	Ile	Asn	Gly	Ala	Ile	Thr	Gln	275	280	285	
Phe	Ser	Cys	Asn	Ile	Ser	His	Leu	Ser	Ser	Leu	Ile	Ala	Gln	Leu	Glu	290	295	300	
Glu	Lys	Gln	Gln	Gln	Pro	Thr	Arg	Glu	Leu	Leu	Gln	Asp	Ile	Gly	Asp	305	310	315	320
Thr	Leu	Ser	Arg	Ala	Glu	Arg	Ile	Arg	Ile	Pro	Glu	Pro	Trp	Ile	Thr	325	330	335	
Pro	Pro	Asp	Leu	Gln	Glu	Lys	Ile	His	Ile	Phe	Ala	Gln	Lys	Cys	Leu	340	345	350	
Phe	Leu	Thr	Glu	Ser	Leu	Lys	Gln	Phe	Thr	Glu	Lys	Met	Gln	Ser	Asp	355	360	365	
Met	Glu	Lys	Ile	Gln	Glu	Leu	Arg	Glu	Ala	Gln	Leu	Tyr	Ser	Val	Asp	370	375	380	
Val	Thr	Leu	Asp	Pro	Asp	Thr	Ala	Tyr	Pro	Ser	Leu	Ile	Leu	Ser	Asp	385	390	395	400
Asn	Leu	Arg	Gln	Val	Arg	Tyr	Ser	Tyr	Leu	Gln	Gln	Asp	Leu	Pro	Asp	405	410	415	
Asn	Pro	Glu	Arg	Phe	Asn	Leu	Phe	Pro	Cys	Val	Leu	Gly	Ser	Pro	Cys	420	425	430	
Phe	Ile	Ala	Gly	Arg	His	Tyr	Trp	Glu	Val	Glu	Val	Gly	Asp	Lys	Ala	435	440	445	

900

Lys Trp Thr Ile Gly Val Cys Glu Asp Ser Val Cys Arg Lys Gly Gly  
450 455 460

Val Thr Ser Ala Pro Gln Asn Gly Phe Trp Ala Val Ser Leu Trp Tyr  
465 470 475 480

Gly Lys Glu Tyr Trp Ala Leu Thr Ser Pro Met Thr Ala Leu Pro Leu  
485 490 495

Arg Thr Pro Leu Gln Arg Val Gly Ile Phe Leu Asp Tyr Asp Ala Gly  
500 505 510

Glu Val Ser Phe Tyr Asn Val Thr Glu Arg Cys His Thr Phe Thr Phe  
515 520 525

Ser His Ala Thr Phe Cys Gly Pro Val Arg Pro Tyr Phe Ser Leu Ser  
530 535 540

Tyr Ser Gly Gly Lys Ser Ala Ala Pro Leu Ile Ile Cys Pro Met Ser  
545 550 555 560

Gly Ile Asp Gly Phe Ser Gly His Val Gly Asn His Gly His Ser Met  
565 570 575

Glu Thr Ser Pro  
580

&lt;210&gt; 944

&lt;211&gt; 437

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (68)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (166)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (317)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 944

901

Ser Ala Thr Gly Ser Gly Glu Lys Glu Cys Gly Val Thr Ala Thr Phe  
 1 5 10 15  
 Asp Ala Ser Arg Thr Thr Phe Thr Arg Glu Gly Ser Phe Arg Val Thr  
 20 25 30  
 Thr Ala Thr Glu Gln Ala Glu Arg Glu Glu Ile Met Lys Gln Met Gln  
 35 40 45  
 Asp Ala Lys Lys Ala Glu Thr Asp Lys Ile Val Val Gly Ser Ser Val  
 50 55 60  
 Ala Pro Gly Xaa Thr Ala Pro Ser Pro Ser Ser Pro Thr Ser Pro Thr  
 65 70 75 80  
 Ser Asp Ala Thr Thr Ser Leu Glu Met Asn Asn Pro His Ala Ile Pro  
 85 90 95  
 Arg Arg His Ala Pro Ile Glu Gln Leu Ala Arg Gln Gly Ser Phe Arg  
 100 105 110  
 Gly Phe Pro Ala Leu Ser Gln Lys Met Ser Pro Phe Lys Arg Gln Leu  
 115 120 125  
 Ser Leu Arg Ile Asn Glu Leu Pro Ser Thr Met Gln Arg Lys Thr Asp  
 130 135 140  
 Phe Pro Ile Lys Asn Ala Val Pro Glu Val Glu Gly Glu Ala Glu Ser  
 145 150 155 160  
 Ile Ser Ser Leu Cys Xaa Gln Ile Thr Asn Ala Phe Ser Thr Pro Glu  
 165 170 175  
 Asp Pro Phe Ser Ser Ala Pro Met Thr Lys Pro Val Thr Val Val Ala  
 180 185 190  
 Pro Gln Ser Pro Thr Phe Gln Gly Thr Glu Trp Gly Gln Ser Ser Gly  
 195 200 205  
 Ala Ala Ser Pro Gly Leu Phe Gln Ala Gly His Arg Arg Thr Pro Ser  
 210 215 220  
 Glu Ala Asp Arg Trp Leu Glu Glu Val Ser Lys Ser Val Arg Ala Gln  
 225 230 235 240  
 Gln Pro Gln Ala Ser Ala Ala Pro Leu Gln Pro Val Leu Gln Pro Pro  
 245 250 255  
 Pro Pro Thr Ala Ile Ser Gln Pro Ala Ser Pro Phe Gln Gly Asn Ala  
 260 265 270

902

Phe Leu Thr Ser Gln Pro Val Pro Val Gly Val Val Pro Ala Leu Gln  
 275 280 285

Pro Ala Phe Val Pro Ala Gln Ser Tyr Pro Val Ala Asn Gly Met Pro  
 290 295 300

Tyr Pro Ala Pro Asn Val Pro Val Val Gly Ile Thr Xaa Ser Gln Met  
 305 310 315 320

Val Ala Asn Val Phe Gly Thr Ala Gly His Pro Gln Ala Ala His Pro  
 325 330 335

His Gln Ser Pro Ser Leu Val Arg Gln Gln Thr Phe Pro His Tyr Glu  
 340 345 350

Ala Ser Ser Ala Thr Thr Ser Pro Phe Phe Lys Pro Pro Ala Gln His  
 355 360 365

Leu Asn Gly Ser Ala Ala Phe Asn Gly Val Asp Asp Gly Arg Leu Ala  
 370 375 380

Ser Ala Asp Arg His Thr Glu Val Pro Thr Gly Thr Cys Pro Val Asp  
 385 390 395 400

Pro Phe Glu Ala Gln Trp Ala Ala Leu Glu Asn Lys Ser Lys Gln Arg  
 405 410 415

Thr Asn Pro Ser Pro Thr Asn Pro Phe Ser Ser Asp Leu Gln Lys Thr  
 420 425 430

Phe Glu Ile Glu Leu  
 435

&lt;210&gt; 945

&lt;211&gt; 160

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (119)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 945

His Gly Ser Met Arg Arg Leu Leu Ile Pro Leu Ala Leu Trp Leu Gly  
 1 5 10 15

Ala Val Gly Val Gly Val Ala Glu Leu Thr Glu Ala Gln Arg Arg Gly  
 20 25 30

903

Leu Gln Val Ala Leu Glu Glu Phe His Lys His Pro Pro Val Gln Trp  
           35                          40                          45  
 Ala Phe Gln Glu Thr Ser Val Glu Ser Ala Val Asp Thr Pro Phe Pro  
           50                          55                          60  
 Ala Gly Ile Phe Val Arg Leu Glu Phe Lys Leu Gln Gln Thr Ser Cys  
           65                          70                          75                          80  
 Arg Lys Arg Asp Trp Lys Lys Pro Glu Cys Lys Val Arg Pro Asn Gly  
                           85                          90                          95  
 Arg Lys Arg Lys Cys Leu Ala Cys Ile Lys Leu Gly Ser Glu Asp Lys  
                           100                          105                          110  
 Val Leu Gly Arg Leu Val Xaa Cys Pro Ile Glu Thr Gln Val Leu Arg  
           115                          120                          125  
 Glu Thr Gln Cys Leu Arg Val Gln Arg Ala Gly Glu Asp Pro His Ser  
           130                          135                          140  
 Phe Tyr Phe Pro Gly Gln Phe Ala Phe Ser Lys Ala Leu Pro Arg Ser  
           145                          150                          155                          160

&lt;210&gt; 946

&lt;211&gt; 221

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (198)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 946

Gly Gly Asp Pro Pro Gly Asp Leu Ser Ser Leu Ser Ser Lys Leu Leu  
           1                          5                          10                          15  
 Pro Gly Phe Thr Thr Leu Gly Phe Lys Asp Glu Arg Arg Asn Lys Val  
           20                          25                          30  
 Thr Phe Leu Ser Ser Ala Thr Thr Ala Leu Ser Met Gln Asn Asn Ser  
           35                          40                          45  
 Val Phe Gly Asp Leu Lys Ser Asp Glu Met Glu Leu Leu Tyr Ser Ala

904

50		55		60
Tyr Gly Asp Glu Thr Gly Val Gln Cys Ala Leu Ser Leu Gln Glu Phe				
65		70		75
80				
Val Lys Asp Ala Gly Ser Tyr Ser Lys Lys Val Val Asp Asp Leu Leu				
	85		90	
95				
Asp Gln Ile Thr Gly Gly Asp His Ser Arg Thr Leu Phe Gln Leu Lys				
	100		105	
110				
Gln Arg Arg Asn Val Pro Met Lys Pro Pro Asp Glu Ala Lys Val Gly				
	115		120	
125				
Asp Thr Leu Gly Asp Ser Ser Ser Ser Val Leu Glu Phe Met Ser Met				
	130		135	
140				
Lys Ser Tyr Pro Asp Val Ser Val Asp Ile Ser Met Leu Ser Ser Leu				
	145		150	
155				
160				
Gly Lys Val Lys Lys Glu Leu Asp Pro Asp Asp Ser His Leu Asn Leu				
	165		170	
175				
Asp Glu Thr Thr Lys Leu Leu Gln Asp Leu His Glu Ala Gln Ala Asp				
	180		185	
190				
Ala Ala Ala Leu Gly Xaa Arg Pro Thr Ser Ala Pro Cys Pro Thr Pro				
	195		200	
205				
Pro Arg Gly Thr Ser Thr Thr Trp Glu Ala Leu Leu Ala				
	210		215	
220				

&lt;210&gt; 947

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (293)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (312)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 947

Glu Gln Tyr Val Cys Ala Gln Arg Asp Glu Tyr Leu Glu Ser Phe Cys

905

1	5	10	15
Lys Met Ala Thr Arg Lys Ile Ser Val Ile Thr Ile Phe Gly Pro Val	20	25	30
Asn Asn Ser Thr Met Lys Ile Asp His Phe Gln Leu Asp Asn Glu Lys	35	40	45
Pro Met Arg Val Val Asp Asp Glu Asp Leu Val Asp Gln Arg Leu Ile	50	55	60
Ser Glu Leu Arg Lys Glu Tyr Gly Met Thr Tyr Asn Asp Phe Phe Met	65	70	75
Val Leu Thr Asp Val Asp Leu Arg Val Lys Gln Tyr Tyr Glu Val Pro	85	90	95
Ile Thr Met Lys Ser Val Phe Asp Leu Ile Asp Thr Phe Gln Ser Arg	100	105	110
Ile Lys Asp Met Glu Lys Gln Lys Lys Glu Gly Ile Val Cys Lys Glu	115	120	125
Asp Lys Lys Gln Ser Leu Glu Asn Phe Leu Ser Arg Phe Arg Trp Arg	130	135	140
Arg Arg Leu Leu Val Ile Ser Ala Pro Asn Asp Glu Asp Trp Ala Tyr	145	150	155
Ser Gln Gln Leu Ser Ala Leu Ser Gly Gln Ala Cys Asn Phe Gly Leu	165	170	175
Arg His Ile Thr Ile Leu Lys Leu Leu Gly Val Gly Glu Glu Val Gly	180	185	190
Gly Val Leu Glu Leu Phe Pro Ile Asn Gly Ser Ser Val Val Glu Arg	195	200	205
Glu Asp Val Pro Ala His Leu Val Lys Asp Ile Arg Asn Tyr Phe Gln	210	215	220
Val Ser Pro Glu Tyr Phe Ser Met Leu Leu Val Gly Lys Asp Gly Asn	225	230	235
Val Lys Ser Trp Tyr Pro Ser Pro Met Trp Ser Met Val Ile Val Tyr	245	250	255
Asp Leu Ile Asp Ser Met Gln Leu Arg Arg Gln Glu Met Ala Ile Gln	260	265	270
Gln Ser Leu Gly Met Arg Cys Pro Glu Asp Glu Tyr Ala Gly Tyr Gly			



906

275                      280                      285  
 Tyr His Ser Tyr Xaa Gln Gly Tyr Gln Asp Gly Tyr Gln Asp Asp Tyr  
 290                      295                      300  
 Arg His His Glu Ser Tyr His Xaa Gly Tyr Pro Tyr  
 305                      310                      315  
  
 <210> 948  
 <211> 162  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 948  
 Ser Thr His Ala Ser Ala His Ala Ser Gly Lys Gln Cys Gln Asp Ser  
 1                      5                      10                      15  
 Lys Asp Ser Asn His Leu Pro Lys Met Ser Leu Ser Ala Phe Thr Leu  
 20                      25                      30  
 Phe Leu Ala Leu Ile Gly Gly Thr Ser Gly Gln Tyr Tyr Asp Tyr Asp  
 35                      40                      45  
 Phe Pro Leu Ser Ile Tyr Gly Gln Ser Ser Pro Asn Cys Ala Pro Glu  
 50                      55                      60  
 Cys Asn Cys Pro Glu Ser Tyr Pro Ser Ala Met Tyr Cys Asp Glu Leu  
 65                      70                      75                      80  
 Lys Leu Lys Ser Val Pro Met Val Pro Pro Gly Ile Lys Tyr Leu Tyr  
 85                      90                      95  
 Leu Arg Asn Asn Gln Ile Asp His Ile Asp Glu Lys Ala Phe Glu Asn  
 100                      105                      110  
 Val Thr Asp Leu Gln Trp Leu Ile Leu Asp His Asn Leu Leu Glu Asn  
 115                      120                      125  
 Ser Lys Ile Lys Gly Arg Val Phe Ser Lys Leu Lys Gln Leu Lys Lys  
 130                      135                      140  
 Leu His Ile Asn His Asn Asn Leu Thr Glu Ser Val Gly Pro Leu Pro  
 145                      150                      155                      160  
 Lys Ser

907

&lt;210&gt; 949

&lt;211&gt; 185

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (114)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 949

Leu	Gly	Phe	Asn	Tyr	Tyr	Tyr	Lys	Tyr	Ser	Asn	Glu	Gly	Asp	Ser	His
1				5					10					15	

Leu	Gly	Gly	Gly	Ser	Arg	Glu	Gly	Ser	Phe	Lys	Glu	Thr	Ile	Thr	Leu
			20					25					30		

Lys	Trp	Cys	Thr	Pro	Arg	Thr	Asn	Asn	Ile	Glu	Leu	His	Tyr	Cys	Thr
		35					40					45			

Gly	Ala	Tyr	Arg	Ile	Ser	Pro	Val	Asp	Val	Asn	Ser	Arg	Pro	Ser	Ser
	50					55					60				

Cys	Leu	Thr	Asn	Phe	Leu	Leu	Asn	Gly	Arg	Ser	Val	Leu	Leu	Glu	Gln
65					70					75					80

Pro	Arg	Lys	Ser	Gly	Ser	Lys	Val	Ile	Ser	His	Met	Leu	Ser	Ser	His
				85					90					95	

Gly	Gly	Glu	Ile	Phe	Leu	His	Val	Leu	Ser	Ser	Ser	Arg	Ser	Ile	Leu
			100					105					110		

Glu	Xaa	Pro	Pro	Ser	Ile	Ser	Glu	Gly	Cys	Gly	Gly	Arg	Val	Thr	Asp
		115					120					125			

Tyr	Arg	Ile	Thr	Asp	Phe	Gly	Glu	Phe	Met	Arg	Glu	Asn	Arg	Leu	Thr
	130					135					140				

Pro	Phe	Leu	Asp	Pro	Arg	Tyr	Lys	Ile	Asp	Gly	Ser	Leu	Glu	Val	Pro
145					150					155					160

Leu	Glu	Arg	Ala	Lys	Asp	Gln	Leu	Glu	Lys	His	Thr	Arg	Tyr	Trp	Pro
				165					170					175	

Met	Asp	His	Phe	Thr	Asn	His	His	Phe
		180					185	

&lt;210&gt; 950

&lt;211&gt; 169

908

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (161)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 950

Pro Arg Arg Pro His Arg Ser Cys Asp Met Pro Ala Ser Gly Glu Pro  
 1 5 10 15

Leu Gly Cys Thr Pro Leu Leu Pro Asn Asp Ser Gly His Pro Ser Glu  
 20 25 30

Leu Gly Gly Thr Arg Arg Ala Gly Asn Gly Ala Leu Gly Gly Pro Lys  
 35 40 45

Ala His Arg Lys Leu Gln Thr His Pro Ser Leu Ala Ser Gln Gly Ser  
 50 55 60

Lys Lys Ser Lys Ser Ser Ser Lys Ser Thr Thr Ser Gln Ile Pro Leu  
 65 70 75 80

Gln Ala Gln Glu Asp Cys Cys Val His Cys Ile Leu Ser Cys Leu Phe  
 85 90 95

Cys Glu Phe Leu Thr Leu Cys Asn Ile Val Leu Asp Cys Ala Thr Cys  
 100 105 110

Gly Ser Cys Ser Ser Glu Asp Ser Cys Leu Cys Cys Cys Cys Gly  
 115 120 125

Ser Gly Glu Cys Ala Asp Cys Asp Leu Pro Cys Asp Leu Asp Cys Gly  
 130 135 140

Ile Leu Asp Ala Cys Cys Glu Ser Ala Asp Cys Leu Glu Ile Cys Met  
 145 150 155 160

Xaa Cys Cys Gly Leu Cys Phe Ser Ser  
 165

&lt;210&gt; 951

&lt;211&gt; 288

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (161)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (234)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 951

Met	Ser	Asp	Glu	Thr	Gly	Arg	Val	Pro	Glu	Arg	Asp	Thr	Lys	Arg	Met
1				5					10					15	

Gln	Val	Cys	Leu	Leu	Ser	Ala	Met	Pro	Leu	Pro	Val	Ala	Leu	Gln	Thr
			20					25					30		

Arg	Leu	Ala	Lys	Arg	Gly	Ile	Leu	Lys	His	Leu	Glu	Pro	Glu	Pro	Glu
		35					40					45			

Glu	Glu	Ile	Ile	Ala	Glu	Asp	Tyr	Asp	Asp	Asp	Pro	Val	Asp	Tyr	Glu
	50					55				60					

Ala	Thr	Arg	Leu	Glu	Gly	Leu	Pro	Pro	Ser	Trp	Tyr	Lys	Val	Phe	Asp
65					70					75					80

Pro	Ser	Cys	Gly	Leu	Pro	Tyr	Tyr	Trp	Asn	Ala	Asp	Thr	Asp	Leu	Val
			85						90					95	

Ser	Trp	Leu	Ser	Pro	His	Asp	Pro	Asn	Ser	Val	Val	Thr	Lys	Ser	Ala
		100						105					110		

Lys	Lys	Leu	Arg	Ser	Ser	Asn	Ala	Asp	Ala	Glu	Glu	Lys	Leu	Asp	Arg
		115					120					125			

Ser	His	Asp	Lys	Ser	Asp	Arg	Gly	His	Asp	Lys	Ser	Asp	Arg	Ser	His
		130				135					140				

Glu	Lys	Leu	Asp	Arg	Gly	His	Asp	Lys	Ser	Asp	Arg	Gly	His	Asp	Lys
145				150						155					160

Xaa	Asp	Arg	Asp	Arg	Glu	Arg	Gly	Tyr	Asp	Lys	Val	Asp	Arg	Glu	Arg
			165						170					175	

Glu	Arg	Asp	Arg	Glu	Arg	Asp	Arg	Asp	Arg	Gly	Tyr	Asp	Lys	Ala	Asp
		180						185					190		

Arg	Glu	Glu	Gly	Lys	Glu	Arg	Arg	His	His	Arg	Arg	Glu	Glu	Leu	Ala
		195					200						205		

Pro	Tyr	Pro	Lys	Ser	Lys	Lys	Ala	Val	Ser	Arg	Lys	Asp	Glu	Glu	Leu
		210				215						220			

910

Asp Pro Met Asp Pro Ser Ser Tyr Ser Xaa Arg Pro Arg Gly Thr Trp  
 225 230 235 240  
 Ser Thr Gly Leu Pro Lys Arg Asn Glu Ala Lys Thr Gly Ala Asp Thr  
 245 250 255  
 Thr Ala Ala Gly Pro Leu Phe Gln Gln Arg Pro Tyr Pro Ser Pro Gly  
 260 265 270  
 Ala Val Leu Arg Ala Asn Ala Glu Ala Ser Arg Thr Lys Gln Gln Asp  
 275 280 285

&lt;210&gt; 952

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 952

Val Gly Gly Val Leu Pro Gly Trp Lys Leu Arg Pro Arg Ser Asp Gly  
 1 5 10 15  
 Gly Leu Ser Glu Asp Gly Pro Gly Arg Asp His Gly Gly Gly Ser Arg  
 20 25 30  
 Gly Gly Arg Gly Gly Ala Ala Gly Gly Arg Gly Gly Cys Gly Pro Gln  
 35 40 45  
 Gly Ala Val Gly Gly Gly Met Ala Arg Ala Ser Ser Gly Asn Gly Ser  
 50 55 60  
 Glu Glu Ala Trp Gly Ala Leu Arg Ala Pro Gln Gln Gln Leu Arg Glu  
 65 70 75 80  
 Leu Cys Pro Gly Val Asn Asn Gln Pro Tyr Leu Cys Glu Ser Gly His  
 85 90 95  
 Cys Cys Gly Glu Thr Gly Cys Cys Thr Tyr Tyr Tyr Glu Leu Trp Trp  
 100 105 110  
 Phe Trp Leu Leu Trp Thr Val Leu Ile Leu Phe Ser Cys Cys Cys Ala  
 115 120 125  
 Phe Arg His Arg Arg Ala Lys Leu Arg Leu Gln Gln Gln Arg Gln  
 130 135 140  
 Arg Glu Ile Asn Leu Leu Ala Tyr His Gly Ala Cys His Gly Ala Gly

911

145                      150                      155                      160  
 Pro Phe Pro Thr Gly Ser Leu Leu Asp Leu Arg Phe Leu Ser Thr Phe  
                                  165                      170                      175  
 Lys Pro Pro Ala Tyr Glu Asp Val Val His Arg Pro Gly Thr Pro Pro  
                                  180                      185                      190  
 Pro Pro Tyr Thr Val Ala Pro Gly Arg Pro Leu Thr Ala Ser Ser Glu  
                                  195                      200                      205  
 Gln Thr Cys Cys Ser Ser Ser Ser Ser Cys Pro Ala His Phe Glu Gly  
                                  210                      215                      220  
 Thr Asn Val Glu Gly Val Ser Ser His Gln Ser Ala Pro Pro His Gln  
 225                                   230                      235                      240  
 Glu Gly Glu Pro Gly Ala Gly Val Thr Pro Ala Ser Thr Pro Pro Ser  
                                  245                      250                      255  
 Cys Arg Tyr Arg Arg Leu Thr Gly Asp Ser Gly Ile Glu Leu Cys Pro  
                                  260                      265                      270  
 Cys Pro Ala Ser Gly Glu Gly Glu Pro Val Lys Glu Val Arg Val Ser  
                                  275                      280                      285  
 Ala Thr Leu Pro Asp Leu Glu Asp Tyr Ser Pro Cys Ala Leu Pro Pro  
                                  290                      295                      300  
 Glu Ser Val Pro Gln Ile Phe Pro Met Gly Leu Ser Ser Ser Glu Gly  
 305                                   310                      315                      320  
 Asp Ile Pro

&lt;210&gt; 953

&lt;211&gt; 433

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 953

Ala Lys Met Ser Val Asn Val Asn Arg Ser Val Ser Asp Gln Phe Tyr  
   1                                  5                                  10                                  15  
 Arg Tyr Lys Met Pro Arg Leu Ile Ala Lys Val Glu Gly Lys Gly Asn  
                                   20                                  25                                  30  
 Gly Ile Lys Thr Val Ile Val Asn Met Val Asp Val Ala Lys Ala Leu  
                                   35                                  40                                  45



913

Glu Cys Val Val Ala Met His Gln Ala Gln Leu Ile Ser Lys Ile Pro  
 325 330 335

His Ile Leu Lys Glu Met Tyr Asp Ala Asp Leu Leu Glu Glu Glu Val  
 340 345 350

Ile Ile Ser Trp Ser Glu Lys Ala Ser Lys Lys Tyr Val Ser Lys Glu  
 355 360 365

Leu Ala Lys Glu Ile Arg Val Lys Ala Glu Pro Phe Ile Lys Trp Leu  
 370 375 380

Lys Glu Ala Glu Glu Glu Ser Ser Gly Gly Glu Glu Glu Asp Glu Asp  
 385 390 395 400

Glu Asn Ile Glu Val Val Tyr Ser Lys Ala Ala Ser Val Pro Lys Val  
 405 410 415

Glu Thr Val Lys Ser Asp Asn Lys Asp Asp Asp Ile Asp Ile Asp Ala  
 420 425 430

Ile

<210> 954

<211> 428

<212> PRT

<213> Homo sapiens

<400> 954

Gly Tyr Gln Ile Gly Met Ala Leu Ala Ser Gly Pro Ala Arg Arg Ala  
 1 5 10 15

Leu Ala Gly Ser Gly Gln Leu Gly Leu Gly Gly Phe Gly Ala Pro Arg  
 20 25 30

Arg Gly Ala Tyr Glu Trp Gly Val Arg Ser Thr Arg Lys Ser Glu Pro  
 35 40 45

Pro Pro Leu Asp Arg Val Tyr Glu Ile Pro Gly Leu Glu Pro Ile Thr  
 50 55 60

Phe Ala Gly Lys Met His Phe Val Pro Trp Leu Ala Arg Pro Ile Phe  
 65 70 75 80

Pro Pro Trp Asp Arg Gly Tyr Lys Asp Pro Arg Phe Tyr Arg Ser Pro  
 85 90 95



914

Pro Leu His Glu His Pro Leu Tyr Lys Asp Gln Ala Cys Tyr Ile Phe  
 100 105 110

His His Arg Cys Arg Leu Leu Glu Gly Val Lys Gln Ala Leu Trp Leu  
 115 120 125

Thr Lys Thr Lys Leu Ile Glu Gly Leu Pro Glu Lys Val Leu Ser Leu  
 130 135 140

Val Asp Asp Pro Arg Asn His Ile Glu Asn Gln Asp Glu Cys Val Leu  
 145 150 155 160

Asn Val Ile Ser His Ala Arg Leu Trp Gln Thr Thr Glu Glu Ile Pro  
 165 170 175

Lys Arg Glu Thr Tyr Cys Pro Val Ile Val Asp Asn Leu Ile Gln Leu  
 180 185 190

Cys Lys Ser Gln Ile Leu Lys His Pro Ser Leu Ala Arg Arg Ile Cys  
 195 200 205

Val Gln Asn Ser Thr Phe Ser Ala Thr Trp Asn Arg Glu Ser Leu Leu  
 210 215 220

Leu Gln Val Arg Gly Ser Gly Gly Ala Arg Leu Ser Thr Lys Asp Pro  
 225 230 235 240

Leu Pro Thr Ile Ala Ser Arg Glu Glu Ile Glu Ala Thr Lys Asn His  
 245 250 255

Val Leu Glu Thr Phe Tyr Pro Ile Ser Pro Ile Ile Asp Leu His Glu  
 260 265 270

Cys Asn Ile Tyr Asp Val Lys Asn Asp Thr Gly Phe Gln Glu Gly Tyr  
 275 280 285

Pro Tyr Pro Tyr Pro His Thr Leu Tyr Leu Leu Asp Lys Ala Asn Leu  
 290 295 300

Arg Pro His Arg Leu Gln Pro Asp Gln Leu Arg Ala Lys Met Ile Leu  
 305 310 315 320

Phe Ala Phe Gly Ser Ala Leu Ala Gln Ala Arg Leu Leu Tyr Gly Asn  
 325 330 335

Asp Ala Lys Val Leu Glu Gln Pro Val Val Val Gln Ser Val Gly Thr  
 340 345 350

Asp Gly Arg Val Phe His Phe Leu Val Phe Gln Leu Asn Thr Thr Asp  
 355 360 365

915

Leu Asp Ser Asn Glu Gly Val Lys Asn Leu Ala Trp Val Asp Ser Asp  
 370 375 380  
 Gln Leu Leu Tyr Gln His Phe Trp Cys Leu Pro Val Ile Lys Lys Arg  
 385 390 395 400  
 Val Val Val Glu Pro Val Gly Pro Val Gly Phe Lys Pro Glu Thr Phe  
 405 410 415  
 Arg Lys Phe Leu Ala Leu Tyr Leu His Gly Ala Ala  
 420 425

&lt;210&gt; 955

&lt;211&gt; 169

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (140)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (166)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 955

Asp Pro Arg Val Arg Pro Arg Val Arg Pro Arg Val Arg Glu Pro Gly  
 1 5 10 15

Asp Arg Met Leu Val Leu Val Leu Gly Asp Leu His Ile Pro His Arg  
 20 25 30

Cys Asn Ser Leu Pro Ala Lys Phe Lys Lys Leu Leu Val Pro Gly Lys  
 35 40 45

Ile Gln His Ile Leu Cys Thr Gly Asn Leu Cys Thr Lys Glu Ser Tyr  
 50 55 60

Asp Tyr Leu Lys Thr Leu Ala Gly Asp Val His Ile Val Arg Gly Asp  
 65 70 75 80

Phe Asp Glu Asn Leu Asn Tyr Pro Glu Gln Lys Val Val Thr Val Gly

916

85										90					95				
Gln	Phe	Lys	Ile	Gly	Leu	Ile	His	Gly	His	Gln	Val	Ile	Pro	Trp	Gly				
			100					105					110						
Asp	Met	Ala	Ser	Leu	Ala	Leu	Leu	Gln	Arg	Gln	Phe	Asp	Val	Asp	Ile				
	115					120						125							
Leu	Ile	Xaa	Gly	His	Thr	His	Lys	Phe	Glu	Ala	Xaa	Glu	His	Glu	Asn				
	130					135						140							
Lys	Phe	Tyr	Ile	Asn	Pro	Gly	Ser	Ala	Thr	Gly	Ala	Tyr	Asn	Ala	Leu				
145					150					155					160				
Glu	Thr	Asn	Ile	Ile	Xaa	Ser	Leu	Cys											
					165														

&lt;210&gt; 956

&lt;211&gt; 39

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 956

Ser	Pro	Tyr	Cys	Gly	Leu	Gln	Val	Met	Leu	Phe	Leu	Leu	His	His	Thr
1				5				10					15		

Leu	Trp	Cys	Leu	Leu	Pro	Cys	Ala	Ser	Ser	Leu	Arg	Leu	Ile	Lys	Lys
	20					25						30			

Val	Ser	Arg	Leu	Leu	Gln	Leu
			35			

&lt;210&gt; 957

&lt;211&gt; 219

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

917

&lt;400&gt; 957

Gln Gly His Cys Gly Cys Xaa Leu Xaa Ser Leu Leu Ala Asn Gly His  
 1 5 10 15

Asp Leu Ala Ala Ala Met Ala Val Asp Lys Ser Asn Pro Thr Ser Lys  
 20 25 30

His Lys Ser Gly Ala Val Ala Ser Leu Leu Ser Lys Ala Glu Arg Ala  
 35 40 45

Thr Glu Leu Ala Ala Glu Gly Gln Leu Thr Leu Gln Gln Phe Ala Gln  
 50 55 60

Ser Thr Glu Met Leu Lys Arg Val Val Gln Glu His Leu Pro Leu Met  
 65 70 75 80

Ser Glu Ala Gly Ala Gly Leu Pro Asp Met Glu Ala Val Ala Gly Ala  
 85 90 95

Glu Ala Leu Asn Gly Gln Ser Asp Phe Pro Tyr Leu Gly Ala Phe Pro  
 100 105 110

Ile Asn Pro Gly Leu Phe Ile Met Thr Pro Ala Gly Val Phe Leu Ala  
 115 120 125

Glu Ser Ala Leu His Met Ala Gly Leu Ala Glu Tyr Pro Met Gln Gly  
 130 135 140

Glu Leu Ala Ser Ala Ile Ser Ser Gly Lys Lys Lys Arg Lys Arg Cys  
 145 150 155 160

Gly Met Cys Ala Pro Cys Arg Arg Arg Ile Asn Cys Glu Gln Cys Ser  
 165 170 175

Ser Cys Arg Asn Arg Lys Thr Gly His Gln Ile Cys Lys Phe Arg Lys  
 180 185 190

Cys Glu Glu Leu Lys Lys Lys Pro Ser Ala Ala Leu Glu Lys Val Met  
 195 200 205

Leu Pro Thr Gly Ala Ala Phe Arg Trp Phe Gln  
 210 215

&lt;210&gt; 958

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

918

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (74)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 958

Leu Pro Gln Asn Ala Val Leu Glu Ala Asp Phe Ala Lys Arg Gly Tyr  
 1 5 10 15

Lys Leu Pro Lys Xaa Arg Lys Thr Gly Thr Thr Ile Ala Gly Val Val  
 20 25 30

Tyr Lys Asp Gly Ile Val Leu Gly Ala Asp Thr Arg Ala Thr Glu Gly  
 35 40 45

Met Val Val Ala Asp Lys Asn Cys Ser Lys Ile His Phe Ile Ser Pro  
 50 55 60

Asn Ile Tyr Cys Cys Gly Ala Gly Thr Xaa Ala Asp Thr Asp Met Thr  
 65 70 75 80

Thr Gln Leu Ile Ser Ser Asn Leu Glu Leu His Ser Leu Ser Thr Gly  
 85 90 95

Arg Leu Pro Arg Val Val Thr Ala Asn Arg Met Leu Lys Gln Met Leu  
 100 105 110

Phe Arg Tyr Gln Gly Tyr Ile Gly Ala Ala Leu Val Leu Gly Gly Val  
 115 120 125

Asp Val Thr Gly Pro His Leu Tyr Ser Ile Tyr Pro His Gly Ser Thr  
 130 135 140

Asp Lys Leu Pro Tyr Val Thr Met Gly Ser Gly Ser Leu Ala Ala Met  
 145 150 155 160

Ala Val Phe Glu Asp Lys Phe Arg Pro Asp Met Glu Glu Glu Glu Ala  
 165 170 175

Lys Asn Leu Val Ser Glu Ala Ile Ala Ala Gly Ile Phe Asn Asp Leu  
 180 185 190

Gly Ser Gly Ser Asn Ile Asp Leu Cys Val Ile Ser Lys Asn Lys Leu  
 195 200 205

Asp Phe Leu Arg Pro Tyr Thr Val Pro Asn Lys Lys Gly Thr Arg Leu  
 210 215 220

919

Gly Arg Tyr Arg Cys Glu Lys Gly Thr Thr Ala Val Leu Thr Glu Lys  
 225 230 235 240

Ile Thr Pro Leu Glu Ile Glu Val Leu Glu Glu Thr Val Gln Thr Met  
 245 250 255

Asp Thr Ser

<210> 959

<211> 75

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (36)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (41)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (53)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 959

Phe Trp Ser Ala Ala Lys Phe Asp Phe Thr Ser His Thr Pro Phe Leu  
 1 5 10 15

Pro Leu Glu Met Gln Phe Arg Gln Arg Pro Cys Gly Glu Ser Cys Asn  
 20 25 30

Ile Lys Phe Xaa Phe Arg Arg Ser Xaa Pro Gln Thr Ser Glu Pro Leu  
 35 40 45

Ala Val Leu Pro Xaa Asn Lys Asn Glu Leu Glu Lys Lys Val Ala Gln  
 50 55 60

Leu Gln Arg Ser Lys Ser Ser Tyr Phe Pro Thr  
 65 70 75

<210> 960

920

&lt;211&gt; 128

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 960

Gln Ser Arg Gly Leu Arg Leu Leu Gly Pro Gly Asp Gly Ala Gly Met  
1 5 10 15

Thr Pro Gly Val Val His Ala Ser Pro Pro Gln Ser Gln Arg Val Pro  
20 25 30

Arg Gln Ala Pro Cys Glu Trp Ala Ile Arg Asn Ile Gly Gln Lys Pro  
35 40 45

Lys Glu Pro Asn Cys His Asn Cys Gly Thr His Ile Gly Leu Arg Ser  
50 55 60

Lys Thr Leu Arg Gly Thr Pro Asn Tyr Leu Pro Ile Arg Gln Asp Thr  
65 70 75 80

His Pro Pro Ser Val Ile Phe Cys Leu Ala Gly Val Gly Val Pro Gly  
85 90 95

Gly Thr Cys Arg Pro Ala Pro Cys Val Pro Arg Phe Ala Ala Leu Pro  
100 105 110

Trp Ala Thr Asn His Pro Gly Pro Gly Cys Leu Ser Asp Leu Arg Ala  
115 120 125

&lt;210&gt; 961

&lt;211&gt; 564

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 961

Lys Met Lys Ser Val Lys Ile Ala Phe Ala Val Thr Leu Glu Thr Val  
1 5 10 15

Leu Ala Gly His Glu Asn Trp Val Asn Ala Val His Trp Gln Pro Val  
20 25 30

Phe Tyr Lys Asp Gly Val Leu Gln Gln Pro Val Arg Leu Leu Ser Ala  
35 40 45

Ser Met Asp Lys Thr Met Ile Leu Trp Ala Pro Asp Glu Glu Ser Gly  
50 55 60

Val	Trp	Leu	Glu	Gln	Val	Arg	Val	Gly	Glu	Val	Gly	Gly	Asn	Thr	Leu	65	70	75	80
Gly	Phe	Tyr	Asp	Cys	Gln	Phe	Asn	Glu	Asp	Gly	Ser	Met	Ile	Ile	Ala	85	90	95	
His	Ala	Phe	His	Gly	Ala	Leu	His	Leu	Trp	Lys	Gln	Asn	Thr	Val	Asn	100	105	110	
Pro	Arg	Glu	Trp	Thr	Pro	Glu	Ile	Val	Ile	Ser	Gly	His	Phe	Asp	Gly	115	120	125	
Val	Gln	Asp	Leu	Val	Trp	Asp	Pro	Glu	Gly	Glu	Phe	Ile	Ile	Thr	Val	130	135	140	
Gly	Thr	Asp	Gln	Thr	Thr	Arg	Leu	Phe	Ala	Pro	Trp	Lys	Arg	Lys	Asp	145	150	155	160
Gln	Ser	Gln	Val	Thr	Trp	His	Glu	Ile	Ala	Arg	Pro	Gln	Ile	His	Gly	165	170	175	
Tyr	Asp	Leu	Lys	Cys	Leu	Ala	Met	Ile	Asn	Arg	Phe	Gln	Phe	Val	Ser	180	185	190	
Gly	Ala	Asp	Glu	Lys	Val	Leu	Arg	Val	Phe	Ser	Ala	Pro	Arg	Asn	Phe	195	200	205	
Val	Glu	Asn	Phe	Cys	Ala	Ile	Thr	Gly	Gln	Ser	Leu	Asn	His	Val	Leu	210	215	220	
Cys	Asn	Gln	Asp	Ser	Asp	Leu	Pro	Glu	Gly	Ala	Thr	Val	Pro	Ala	Leu	225	230	235	240
Gly	Leu	Ser	Asn	Lys	Ala	Val	Phe	Gln	Gly	Asp	Ile	Ala	Ser	Gln	Pro	245	250	255	
Ser	Asp	Glu	Glu	Glu	Leu	Leu	Thr	Ser	Thr	Gly	Phe	Glu	Tyr	Gln	Gln	260	265	270	
Val	Ala	Phe	Gln	Pro	Ser	Ile	Leu	Thr	Glu	Pro	Pro	Thr	Glu	Asp	His	275	280	285	
Leu	Leu	Gln	Asn	Thr	Leu	Trp	Pro	Glu	Val	Gln	Lys	Leu	Tyr	Gly	His	290	295	300	
Gly	Tyr	Glu	Ile	Phe	Cys	Val	Thr	Cys	Asn	Ser	Ser	Lys	Thr	Leu	Leu	305	310	315	320
Ala	Ser	Ala	Cys	Lys	Ala	Ala	Lys	Lys	Glu	His	Ala	Ala	Ile	Ile	Leu	325	330	335	



922

Trp Asn Thr Thr Ser Trp Lys Gln Val Gln Asn Leu Val Phe His Ser  
 340 345 350  
 Leu Thr Val Thr Gln Met Ala Phe Ser Pro Asn Glu Lys Phe Leu Leu  
 355 360 365  
 Ala Val Ser Arg Asp Arg Thr Trp Ser Leu Trp Lys Lys Gln Asp Thr  
 370 375 380  
 Ile Ser Pro Glu Phe Glu Pro Val Phe Ser Leu Phe Ala Phe Thr Asn  
 385 390 395 400  
 Lys Ile Thr Ser Val His Ser Arg Ile Ile Trp Ser Cys Asp Trp Ser  
 405 410 415  
 Pro Asp Ser Lys Tyr Phe Phe Thr Gly Ser Arg Asp Lys Lys Val Val  
 420 425 430  
 Val Trp Gly Glu Cys Asp Ser Thr Asp Asp Cys Ile Glu His Asn Ile  
 435 440 445  
 Gly Pro Cys Ser Ser Val Leu Asp Val Gly Gly Ala Val Thr Ala Val  
 450 455 460  
 Ser Val Cys Pro Val Leu His Pro Ser Gln Arg Tyr Val Val Ala Val  
 465 470 475 480  
 Gly Leu Glu Cys Gly Lys Ile Cys Leu Tyr Thr Trp Lys Lys Thr Asp  
 485 490 495  
 Gln Val Pro Glu Ile Asn Asp Trp Thr His Cys Val Glu Thr Ser Gln  
 500 505 510  
 Ser Gln Ser His Thr Leu Ala Ile Arg Lys Leu Cys Trp Lys Asn Cys  
 515 520 525  
 Ser Gly Lys Thr Glu Gln Lys Glu Ala Glu Gly Ala Glu Trp Leu His  
 530 535 540  
 Phe Ala Ser Cys Gly Glu Asp His Thr Val Lys Ile His Arg Val Asn  
 545 550 555 560  
 Lys Cys Ala Leu

&lt;210&gt; 962

&lt;211&gt; 43

&lt;212&gt; PRT

923

&lt;213&gt; Homo sapiens

&lt;400&gt; 962

Phe Lys Tyr Val Lys Cys Gly Ser Phe Thr Pro His His Ser Glu His  
 1 5 10 15

Thr Gly Glu Met Cys Phe Phe Gly Lys Leu Lys Gly Ala Ser Ser Leu  
 20 25 30

Ile Gln Arg Asn Ile Ser His Val Cys Ser Phe  
 35 40

&lt;210&gt; 963

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 963

Glu Ser Arg Val Asp Pro Arg Val Arg Glu Arg Ser Ala Arg Thr Ala  
 1 5 10 15

Gly Ala Thr Val Gly Pro Ala Ala Val Met Ser Val Leu Arg Pro Leu  
 20 25 30

Asp Lys Leu Pro Gly Leu Asn Thr Ala Thr Ile Leu Leu Val Gly Thr  
 35 40 45

Glu Asp Ala Leu Leu Gln Gln Leu Ala Asp Ser Met Leu Lys Glu Asp  
 50 55 60

Cys Ala Ser Glu Leu Lys Val His Leu Ala Lys Ser Leu Pro Leu Pro  
 65 70 75 80

Ser Ser Val Asn Arg Pro Arg Ile Asp Leu Ile Val Phe Val Val Asn  
 85 90 95

Leu His Ser Lys Tyr Ser Leu Gln Asn Thr Glu Glu Ser Leu Arg His  
 100 105 110

Val Asp Ala Ser Phe Phe Leu Gly Lys Val Cys Phe Leu Ala Thr Gly  
 115 120 125

Gly Gly Xaa Leu  
 130

924

&lt;210&gt; 964

&lt;211&gt; 175

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 964

His	Glu	Arg	Ser	Cys	Cys	Asp	Ala	Arg	Ser	Glu	Ala	Xaa	Gln	Gly	Arg
1				5					10					15	

Gly	Arg	Val	Gly	Ala	Gly	Ala	Gly	Ala	Ala	Trp	Ser	Ser	Cys	Gly	Val
		20					25						30		

Ser	Gly	Pro	Gly	Arg	Gly	Met	Gly	Val	Leu	Ala	Ala	Ala	Ala	Arg	Cys
		35				40						45			

Leu	Val	Arg	Gly	Ala	Asp	Arg	Met	Ser	Lys	Trp	Thr	Ser	Lys	Arg	Gly
	50					55					60				

Pro	Arg	Ser	Phe	Arg	Gly	Arg	Xaa	Gly	Arg	Gly	Ala	Lys	Gly	Ile	Gly
65					70					75				80	

Phe	Leu	Thr	Ser	Gly	Trp	Arg	Phe	Val	Gln	Ile	Lys	Glu	Met	Val	Pro
				85					90					95	

Glu	Phe	Val	Val	Pro	Asp	Leu	Thr	Gly	Phe	Lys	Leu	Lys	Pro	Tyr	Val
			100					105						110	

Ser	Tyr	Leu	Ala	Pro	Glu	Ser	Glu	Glu	Thr	Pro	Leu	Thr	Ala	Ala	Gln
		115					120					125			

Leu	Phe	Ser	Glu	Ala	Val	Ala	Pro	Ala	Ile	Glu	Lys	Asp	Phe	Lys	Asp
	130					135						140			

Gly	Thr	Phe	Asp	Pro	Asp	Asn	Leu	Glu	Lys	Tyr	Gly	Phe	Glu	Pro	Thr
145					150					155					160

Gln	Glu	Gly	Lys	Leu	Phe	Gln	Leu	Tyr	Pro	Arg	Asn	Phe	Leu	Arg	
			165						170					175	

925

&lt;210&gt; 965

&lt;211&gt; 363

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (356)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 965

Leu Leu Arg Arg Leu Arg Thr Ala Val Pro Gly Ser Leu Glu Ala Gln  
 1 5 10 15

Lys Arg Lys Pro Ser Pro Gly Pro Gly Ser Leu Asp Leu Val Ser Leu  
 20 25 30

Gly Ser Gly Asn Ser Gly Ser Gln Arg Thr Val Leu Ile Met Asp Lys  
 35 40 45

Gln Asn Ser Gln Met Asn Ala Ser His Pro Glu Thr Asn Leu Pro Val  
 50 55 60

Gly Tyr Pro Pro Gln Tyr Pro Pro Thr Ala Phe Gln Gly Pro Pro Gly  
 65 70 75 80

Tyr Ser Gly Tyr Pro Gly Pro Gln Val Ser Tyr Pro Pro Pro Pro Ala  
 85 90 95

Gly His Ser Gly Pro Gly Pro Ala Gly Phe Pro Val Pro Asn Gln Pro  
 100 105 110

Val Tyr Asn Gln Pro Val Tyr Asn Gln Pro Val Gly Ala Ala Gly Val  
 115 120 125

Pro Trp Met Pro Ala Pro Gln Pro Pro Leu Asn Cys Pro Pro Gly Leu  
 130 135 140

Glu Tyr Leu Ser Gln Ile Asp Gln Ile Leu Ile His Gln Gln Ile Glu  
 145 150 155 160

Leu Leu Glu Val Leu Thr Gly Phe Glu Thr Asn Asn Lys Tyr Glu Ile  
 165 170 175

Lys Asn Ser Phe Gly Gln Arg Val Tyr Phe Ala Ala Glu Asp Thr Asp  
 180 185 190

Cys Cys Thr Arg Asn Cys Cys Gly Pro Ser Arg Pro Phe Thr Leu Arg

926

195	200	205
Ile Ile Asp Asn Met Gly Gln Glu Val Ile Thr Leu Glu Arg Pro Leu		
210	215	220
Arg Cys Ser Ser Cys Cys Cys Pro Cys Cys Leu Gln Glu Ile Glu Ile		
225	230	235 240
Gln Ala Pro Pro Gly Val Pro Ile Gly Tyr Val Ile Gln Thr Trp His		
	245	250 255
Pro Cys Leu Pro Lys Phe Thr Ile Gln Asn Glu Lys Arg Glu Asp Val		
	260	265 270
Leu Lys Ile Ser Gly Pro Cys Val Val Cys Ser Cys Cys Gly Asp Val		
	275	280 285
Asp Phe Glu Ile Lys Ser Leu Asp Glu Gln Cys Val Val Gly Lys Ile		
	290	295 300
Ser Lys His Trp Thr Gly Ile Leu Arg Glu Ala Phe Thr Asp Ala Asp		
305	310	315 320
Asn Phe Gly Ile Gln Phe Pro Leu Asp Leu Asp Val Lys Met Lys Ala		
	325	330 335
Val Met Ile Gly Ala Cys Phe Leu Ile Asp Phe Met Phe Phe Glu Ser		
	340	345 350
Thr Gly Ser Xaa Glu Gln Lys Ser Gly Val Trp		
	355	360

&lt;210&gt; 966

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 966

Ala Glu Val His Thr Arg Lys Gln Gly Pro Glu Ala Glu Pro Ala Ala
1 5 10 15
Met Ser Gly Glu Pro Gly Gln Thr Ser Val Ala Pro Pro Pro Glu Glu
20 25 30
Val Glu Pro Gly Ser Gly Val Arg Ile Val Val Glu Tyr Cys Glu Pro
35 40 45
Cys Gly Phe Glu Ala Thr Tyr Leu Glu Leu Ala Ser Ala Val Lys Glu
50 55 60

927

Gln Tyr Pro Gly Ile Glu Ile Glu Ser Arg Leu Gly Gly Thr Gly Ala  
 65 70 75 80  
 Phe Glu Ile Glu Ile Asn Gly Gln Leu Val Phe Ser Lys Leu Glu Asn  
 85 90 95  
 Gly Gly Phe Pro Tyr Glu Lys Asp Leu Ile Glu Ala Ile Arg Arg Ala  
 100 105 110  
 Ser Asn Gly Glu Thr Leu Glu Lys Ile Thr Asn Ser Arg Pro Pro Cys  
 115 120 125  
 Val Ile Leu  
 130

&lt;210&gt; 967

&lt;211&gt; 344

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (68)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (306)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 967

Pro Thr Pro Ala Ser His Ser Pro Ser Pro Ser Leu Pro Ala Leu Pro  
 1 5 10 15

Pro Ser Pro Pro His Arg Pro Asp Ser Pro Leu Phe Asn Ser Arg Cys  
 20 25 30

Ser Ser Pro Leu Gln Leu Asn Leu Leu Gln Leu Glu Glu Leu Pro Arg  
 35 40 45

Ala Glu Gly Ala Ala Val Ala Gly Gly Pro Gly Ser Ser Ala Gly Pro  
 50 55 60

Pro Pro Pro Xaa Ala Glu Ala Ala Glu Pro Glu Ala Arg Leu Ala Glu  
 65 70 75 80

Val Thr Glu Ser Ser Asn Gln Asp Ala Leu Ser Gly Ser Ser Asp Leu  
 85 90 95

Leu Glu Leu Leu Leu Gln Glu Asp Ser Arg Ser Gly Thr Gly Ser Ala  
 100 105 110

Ala Ser Gly Ser Leu Gly Ser Gly Leu Gly Ser Gly Ser Gly Ser Gly  
 115 120 125

Ser His Glu Gly Gly Ser Thr Ser Ala Ser Ile Thr Arg Ser Ser Gln  
 130 135 140

Ser Ser His Thr Ser Lys Tyr Phe Gly Ser Ile Asp Ser Ser Glu Ala  
 145 150 155 160

Glu Ala Gly Ala Ala Arg Gly Gly Ala Glu Pro Gly Asp Gln Val Ile  
 165 170 175

Lys Tyr Val Leu Gln Asp Pro Ile Trp Leu Leu Met Ala Asn Ala Asp  
 180 185 190

Gln Arg Val Met Met Thr Tyr Gln Val Pro Ser Arg Asp Met Thr Ser  
 195 200 205

Val Leu Lys Gln Asp Arg Glu Arg Leu Arg Ala Met Gln Lys Gln Gln  
 210 215 220

Pro Arg Phe Ser Glu Asp Gln Arg Arg Glu Leu Gly Ala Val His Ser  
 225 230 235 240

Trp Val Arg Lys Gly Gln Leu Pro Arg Ala Leu Asp Val Met Ala Cys  
 245 250 255

Val Asp Cys Gly Ser Ser Thr Gln Asp Pro Gly His Pro Asp Asp Pro  
 260 265 270

Leu Phe Ser Glu Leu Asp Gly Leu Gly Leu Glu Pro Met Glu Glu Gly  
 275 280 285

Gly Gly Glu Gln Gly Ser Ser Gly Gly Gly Ser Gly Glu Gly Glu Gly  
 290 295 300

Cys Xaa Glu Ala Gln Gly Gly Ala Lys Ala Ser Ser Ser Gln Asp Leu  
 305 310 315 320

Ala Met Glu Glu Glu Glu Glu Gly Arg Ser Ser Ser Ser Pro Ala Leu  
 325 330 335

Pro Thr Ala Gly Asn Cys Thr Ser  
 340

929

&lt;210&gt; 968

&lt;211&gt; 67

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 968

Arg Cys Ser Ser Phe Phe Leu Ser Leu Leu Val Lys Ile Thr Asn Ile  
 1 5 10 15

Trp Glu Gly Phe Lys Asp Ala Cys Tyr Gly Ala Asn Val Leu Ser Leu  
 20 25 30

Leu Asn Ser Arg Ser Glu Leu Leu Thr Cys Ile Gln Asn Ile Asn Ala  
 35 40 45

Gln Asn Leu Tyr Met Ser Pro Ile Arg Lys Ile His Trp His Ala Thr  
 50 55 60

Gly Asp Ser  
 65

&lt;210&gt; 969

&lt;211&gt; 325

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 969

Leu Asn Leu Arg Ser Pro His Ile Cys Phe Arg Ser Ser Lys Pro Ser  
 1 5 10 15

Trp Ala Asp Gln Val Glu Glu Glu Gly Glu Asp Asp Lys Cys Val Thr  
 20 25 30

Ser Glu Leu Leu Lys Gly Ile Pro Leu Ala Thr Gly Asp Thr Ser Pro  
 35 40 45

Glu Pro Glu Leu Leu Pro Gly Ala Pro Leu Pro Pro Pro Lys Glu Val  
 50 55 60

Ile Asn Gly Asn Ile Lys Thr Val Thr Glu Tyr Lys Ile Asp Glu Asp  
 65 70 75 80

Gly Lys Lys Phe Lys Ile Val Arg Thr Phe Arg Ile Glu Thr Arg Lys  
 85 90 95

Ala Ser Lys Ala Val Ala Arg Arg Lys Asn Trp Lys Lys Phe Gly Asn  
 100 105 110

Ser Glu Phe Asp Pro Pro Gly Pro Asn Val Ala Thr Thr Thr Val Ser



930

115	120	125
Asp Asp Val Ser Met Thr Phe Ile Thr Ser Lys Glu Asp Leu Asn Cys		
130	135	140
Gln Glu Glu Glu Asp Pro Met Asn Lys Leu Lys Gly Gln Lys Ile Val		
145	150	155
Ser Cys Arg Ile Cys Lys Gly Asp His Trp Thr Thr Arg Cys Pro Tyr		
165	170	175
Lys Asp Thr Leu Gly Pro Met Gln Lys Glu Leu Ala Glu Gln Leu Gly		
180	185	190
Leu Ser Thr Gly Glu Lys Glu Lys Leu Pro Gly Glu Leu Glu Pro Val		
195	200	205
Gln Ala Thr Gln Asn Lys Thr Gly Lys Tyr Val Pro Pro Ser Leu Arg		
210	215	220
Asp Gly Ala Ser Arg Arg Gly Glu Ser Met Gln Pro Asn Arg Arg Ala		
225	230	235
Asp Asp Asn Ala Thr Ile Arg Val Thr Asn Leu Ser Glu Asp Thr Arg		
245	250	255
Glu Thr Asp Leu Gln Glu Leu Phe Arg Pro Phe Gly Ser Ile Ser Arg		
260	265	270
Ile Tyr Leu Ala Lys Asp Lys Thr Thr Gly Gln Ser Lys Gly Phe Ala		
275	280	285
Phe Ile Ser Phe His Arg Arg Glu Asp Ala Ala Arg Ala Ile Ala Gly		
290	295	300
Val Ser Gly Phe Gly Tyr Asp His Leu Ile Leu Asn Val Glu Trp Ala		
305	310	315
Lys Pro Ser Thr Asn		
325		

&lt;210&gt; 970

&lt;211&gt; 357

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 970

Val Arg Val Lys Met Ala Ala Ala Glu Ala Ala Asn Cys Ile Met Glu
1 5 10 15

Val	Ser	Cys	Gly	Gln	Ala	Glu	Ser	Ser	Glu	Lys	Pro	Asn	Ala	Glu	Asp	20	25	30	
Met	Thr	Ser	Lys	Asp	Tyr	Tyr	Phe	Asp	Ser	Tyr	Ala	His	Phe	Gly	Ile	35	40	45	
His	Glu	Glu	Met	Leu	Lys	Asp	Glu	Val	Arg	Thr	Leu	Thr	Tyr	Arg	Asn	50	55	60	
Ser	Met	Phe	His	Asn	Arg	His	Leu	Phe	Lys	Asp	Lys	Val	Val	Leu	Asp	65	70	75	80
Val	Gly	Ser	Gly	Thr	Gly	Ile	Leu	Cys	Met	Phe	Ala	Ala	Lys	Ala	Gly	85	90	95	
Ala	Arg	Lys	Val	Ile	Gly	Ile	Glu	Cys	Ser	Ser	Ile	Ser	Asp	Tyr	Ala	100	105	110	
Val	Lys	Ile	Val	Lys	Ala	Asn	Lys	Leu	Asp	His	Val	Val	Thr	Ile	Ile	115	120	125	
Lys	Gly	Lys	Val	Glu	Glu	Val	Glu	Leu	Pro	Val	Glu	Lys	Val	Asp	Ile	130	135	140	
Ile	Ile	Ser	Glu	Trp	Met	Gly	Tyr	Cys	Leu	Phe	Tyr	Glu	Ser	Met	Leu	145	150	155	160
Asn	Thr	Val	Leu	Tyr	Ala	Arg	Asp	Lys	Trp	Leu	Ala	Pro	Asp	Gly	Leu	165	170	175	
Ile	Phe	Pro	Asp	Arg	Ala	Thr	Leu	Tyr	Val	Thr	Ala	Ile	Glu	Asp	Arg	180	185	190	
Gln	Tyr	Lys	Asp	Tyr	Lys	Ile	His	Trp	Trp	Glu	Asn	Val	Tyr	Gly	Phe	195	200	205	
Asp	Met	Ser	Cys	Ile	Lys	Asp	Val	Ala	Ile	Lys	Glu	Pro	Leu	Val	Asp	210	215	220	
Val	Val	Asp	Pro	Lys	Gln	Leu	Val	Thr	Asn	Ala	Cys	Leu	Ile	Lys	Glu	225	230	235	240
Val	Asp	Ile	Tyr	Thr	Val	Lys	Val	Glu	Asp	Leu	Thr	Phe	Thr	Ser	Pro	245	250	255	
Phe	Cys	Leu	Gln	Val	Lys	Arg	Asn	Asp	Tyr	Val	His	Ala	Leu	Val	Ala	260	265	270	
Tyr	Phe	Asn	Ile	Glu	Phe	Thr	Arg	Cys	His	Lys	Arg	Thr	Gly	Phe	Ser	275	280	285	

932

Thr Ser Pro Glu Ser Pro Tyr Thr His Trp Lys Gln Thr Val Phe Tyr  
 290 295 300

Met Glu Asp Tyr Leu Thr Val Lys Thr Gly Glu Glu Ile Phe Gly Thr  
 305 310 315 320

Ile Gly Met Arg Pro Asn Ala Lys Asn Asn Arg Asp Leu Asp Phe Thr  
 325 330 335

Ile Asp Leu Asp Phe Lys Gly Gln Leu Cys Glu Leu Ser Cys Ser Thr  
 340 345 350

Asp Tyr Arg Met Arg  
 355

<210> 971

<211> 176

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (10)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (11)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (176)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 971

Gly Val Pro Arg Arg Ala Tyr Gln Ala Xaa Xaa Leu Arg Arg Val Asp  
 1 5 10 15

Asp Phe Lys Lys Ala Phe Ser Lys Glu Lys Met Glu Lys Thr Lys Val  
 20 25 30

Arg Thr Arg Glu Asn Leu Glu Lys Thr Arg Leu Lys Thr Lys Glu Asn  
 35 40 45

Leu Glu Lys Thr Arg His Thr Leu Glu Lys Arg Met Asn Lys Leu Gly  
 50 55 60

933

Thr Arg Leu Val Pro Ala Glu Arg Arg Glu Lys Leu Lys Thr Ser Arg  
 65 70 75 80  
 Asp Lys Leu Arg Lys Ser Phe Thr Pro Asp His Val Val Tyr Ala Arg  
 85 90 95  
 Ser Lys Thr Ala Val Tyr Lys Val Pro Pro Phe Thr Phe His Val Lys  
 100 105 110  
 Lys Ile Arg Glu Gly Gln Val Glu Val Leu Lys Ala Thr Glu Met Val  
 115 120 125  
 Glu Val Gly Ala Asp Asp Asp Glu Gly Gly Ala Glu Arg Gly Glu Ala  
 130 135 140  
 Gly Asp Leu Arg Arg Gly Ser Ser Pro Asp Val His Ala Leu Leu Glu  
 145 150 155 160  
 Ile Thr Glu Glu Ser Asp Ala Val Leu Val Asp Lys Ser Asp Ser Xaa  
 165 170 175

&lt;210&gt; 972

&lt;211&gt; 159

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 972

Gly Lys Ala Arg Arg Arg Ala Ala Lys Leu Gln Ser Ser Gln Glu Pro  
 1 5 10 15  
 Glu Ala Pro Pro Pro Arg Asp Val Ala Leu Leu Gln Gly Arg Ala Asn  
 20 25 30  
 Asp Leu Val Lys Tyr Leu Leu Ala Lys Asp Gln Thr Lys Ile Pro Ile  
 35 40 45  
 Lys Arg Ser Asp Met Leu Lys Asp Ile Ile Lys Glu Tyr Thr Asp Val  
 50 55 60  
 Tyr Pro Glu Ile Ile Glu Arg Ala Gly Tyr Ser Leu Glu Lys Val Phe  
 65 70 75 80  
 Gly Ile Gln Leu Lys Glu Ile Asp Lys Asn Asp His Leu Tyr Ile Leu  
 85 90 95  
 Leu Ser Thr Leu Glu Pro Thr Asp Ala Gly Ile Leu Gly Thr Thr Lys

934

	100		105		110
Asp Ser Pro Lys Leu Gly Leu Leu Met Val Leu Leu Ser Ile Ile Phe					
	115		120		125
Met Asn Gly Asn Arg Ser Ser Glu Ala Val Ile Trp Glu Val Leu Arg					
	130		135		140
Lys Leu Gly Leu Arg Leu Gly Tyr Ile Ile His Ser Leu Gly Thr					
	145		150		155

&lt;210&gt; 973

&lt;211&gt; 233

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 973

Arg Ala Xaa Lys Ala Ala Pro Arg Arg Ala Leu Ala Arg Leu Val Leu					
	1		5		10
					15
Ala Trp Cys Arg Trp Leu Val Ser Ala Thr Cys Val Gly Thr Ala Asp					
		20		25	30
Arg Lys Met Ser Ser Gly Asn Ala Lys Ile Gly His Pro Ala Pro Asn					
	35		40		45
Phe Lys Ala Thr Ala Val Met Pro Asp Gly Gln Phe Lys Asp Ile Ser					
	50		55		60
Leu Ser Asp Tyr Lys Gly Lys Tyr Val Val Phe Phe Phe Tyr Pro Leu					
	65		70		75
					80
Asp Phe Thr Phe Val Cys Pro Thr Glu Ile Ile Ala Phe Ser Asp Arg					
		85		90	95
Ala Glu Glu Phe Lys Lys Leu Asn Cys Gln Val Ile Gly Ala Ser Val					
	100		105		110
Asp Ser His Phe Cys His Leu Ala Trp Val Asn Thr Pro Lys Lys Gln					
	115		120		125
Gly Gly Leu Gly Pro Met Asn Ile Pro Leu Val Ser Asp Pro Lys Arg					
	130		135		140

935

Thr Ile Ala Gln Asp Tyr Gly Val Leu Lys Ala Asp Glu Gly Ile Ser  
 145 150 155 160  
 Phe Arg Gly Leu Phe Ile Ile Asp Asp Lys Gly Ile Leu Arg Gln Ile  
 165 170 175  
 Thr Val Asn Asp Leu Pro Val Gly Arg Ser Val Asp Glu Thr Leu Arg  
 180 185 190  
 Leu Val Gln Ala Phe Gln Phe Thr Asp Lys His Gly Glu Val Cys Pro  
 195 200 205  
 Ala Gly Trp Lys Pro Gly Ser Asp Thr Ile Lys Pro Asp Val Gln Lys  
 210 215 220  
 Ser Lys Glu Tyr Phe Ser Lys Gln Lys  
 225 230

&lt;210&gt; 974

&lt;211&gt; 174

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 974

Ser Trp Asp Arg Arg Leu Met Gln Asp Asp Asn Arg Gly Leu Gly Gln  
 1 5 10 15  
 Gly Leu Lys Asp Asn Lys Arg Thr Cys Asn Arg Phe Arg Leu Leu Leu  
 20 25 30  
 Glu Arg Arg Thr Xaa Gly Ser Glu Val Gln Asp Ser His Ser Thr Ser  
 35 40 45  
 Tyr Pro Ser Leu Leu Ser His Leu Thr Ser Met Tyr Leu Asn Ala Pro  
 50 55 60  
 Ala Leu Ala Leu Pro Val Ala Arg Met Gln Leu Pro Gly Pro Gly Leu  
 65 70 75 80  
 Arg Ser Phe His Pro Leu Ala Ser Ser Leu Pro Cys Asp Phe His Leu  
 85 90 95  
 Leu Asn Leu Arg Thr Leu Gln Ala Glu Glu Asp Thr Leu Pro Ser Ala  
 100 105 110

936

Glu Thr Ala Leu Ile Leu His Arg Lys Val Leu Thr Ala Ala Trp Arg  
 115 120 125

Gln Glu Leu Gly Leu Gln Leu His His Lys Pro Arg Gln Gly Ser Pro  
 130 135 140

Gly Gln Pro Phe Pro Trp Pro Gly Cys Gly Ile Pro Ser Ala Asn Leu  
 145 150 155 160

Leu Asp Val Thr Val Pro Ser Gly Leu Pro Val Gln Gln His  
 165 170

<210> 975

<211> 380

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (134)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 975

Arg Pro Glu Val Arg His Ser Arg Glu Ala Pro Glu Ser Arg Arg Trp  
 1 5 10 15

Ala Val Trp Arg Ser Leu Glu Ser Leu Pro Arg His Gln Leu Leu Cys  
 20 25 30

Leu Pro Val Gly Ala Pro Pro Ala Pro Ala Met Leu Ser Ala Leu Ala  
 35 40 45

Arg Pro Ala Ser Ala Ala Leu Arg Arg Ser Phe Ser Thr Ser Ala Gln  
 50 55 60

Asn Asn Ala Lys Val Ala Val Leu Gly Ala Ser Gly Gly Ile Gly Gln  
 65 70 75 80

Pro Leu Ser Leu Leu Leu Lys Asn Ser Pro Leu Val Ser Arg Leu Thr  
 85 90 95

Leu Tyr Asp Ile Ala His Thr Pro Gly Val Ala Ala Asp Leu Ser His  
 100 105 110

Ile Glu Thr Lys Ala Ala Val Lys Gly Tyr Leu Gly Pro Glu Gln Leu  
 115 120 125

Pro Asp Cys Leu Lys Xaa Cys Asp Val Val Val Ile Pro Ala Gly Val

937

130	135	140
Pro Arg Lys Pro Gly Met Thr Arg Asp Asp Leu Phe Asn Thr Asn Ala		
145	150	155 160
Thr Ile Val Ala Thr Leu Thr Ala Ala Cys Ala Gln His Cys Pro Glu		
	165 170	175
Ala Met Ile Cys Val Ile Ala Asn Pro Val Asn Ser Thr Ile Pro Ile		
	180 185	190
Thr Ala Glu Val Phe Lys Lys His Gly Val Tyr Asn Pro Asn Lys Ile		
	195 200	205
Phe Gly Val Thr Thr Leu Asp Ile Val Arg Ala Asn Thr Phe Val Ala		
	210 215	220
Glu Leu Lys Gly Leu Asp Pro Ala Arg Val Asn Val Pro Val Ile Gly		
	225 230	235 240
Gly His Ala Gly Lys Thr Ile Ile Pro Leu Ile Ser Gln Cys Thr Pro		
	245 250	255
Lys Val Asp Phe Pro Gln Asp Gln Leu Thr Ala Leu Thr Gly Arg Ile		
	260 265	270
Gln Glu Ala Gly Thr Glu Val Val Lys Ala Lys Ala Gly Ala Gly Ser		
	275 280	285
Ala Thr Leu Ser Met Ala Tyr Ala Gly Ala Arg Phe Val Phe Ser Leu		
	290 295	300
Val Asp Ala Met Asn Gly Lys Glu Gly Val Val Glu Cys Ser Phe Val		
	305 310	315 320
Lys Ser Gln Glu Thr Glu Cys Thr Tyr Phe Ser Thr Pro Leu Leu Leu		
	325 330	335
Gly Lys Lys Gly Ile Glu Lys Asn Leu Gly Ile Gly Lys Val Ser Ser		
	340 345	350
Phe Glu Glu Lys Met Ile Ser Asp Ala Ile Pro Glu Leu Lys Ala Ser		
	355 360	365
Ile Lys Lys Gly Glu Asp Phe Val Lys Thr Leu Lys		
	370 375	380

&lt;210&gt; 976

&lt;211&gt; 269



938

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 976

Ala Ala Leu Ser Gln Ile Thr Ile Ala Thr Pro Pro Ala Val Lys Gln  
 1 5 10 15  
 Thr Ile Ser Asn Ile Ser Gly Phe Asn Glu Thr Cys Leu Arg Trp Arg  
 20 25 30  
 Ser Ile Lys Thr Ala Asp Met Glu Glu Met Tyr Leu Phe His Ile Trp  
 35 40 45  
 Gly Gln Arg Trp Tyr Gln Lys Glu Phe Ala Gln Glu Met Thr Phe Asn  
 50 55 60  
 Ile Ser Ser Ser Ser Arg Asp Pro Glu Val Cys Leu Asp Leu Arg Pro  
 65 70 75 80  
 Gly Thr Asn Tyr Asn Val Ser Leu Arg Ala Leu Ser Ser Glu Leu Pro  
 85 90 95  
 Val Val Ile Ser Leu Thr Thr Gln Ile Thr Glu Pro Pro Leu Pro Glu  
 100 105 110  
 Val Glu Phe Phe Thr Val His Arg Gly Pro Leu Pro Arg Leu Arg Leu  
 115 120 125  
 Arg Lys Ala Lys Glu Lys Asn Gly Pro Ile Ser Ser Tyr Gln Val Leu  
 130 135 140  
 Val Leu Pro Leu Ala Leu Gln Ser Thr Phe Ser Cys Asp Ser Glu Gly  
 145 150 155 160  
 Ala Ser Ser Phe Phe Ser Asn Ala Ser Asp Ala Asp Gly Tyr Val Ala  
 165 170 175  
 Ala Glu Leu Leu Ala Lys Asp Val Pro Asp Asp Ala Met Glu Ile Pro  
 180 185 190  
 Ile Gly Asp Arg Leu Tyr Tyr Gly Glu Tyr Tyr Asn Ala Pro Leu Lys  
 195 200 205  
 Arg Gly Ser Asp Tyr Cys Ile Ile Leu Arg Ile Thr Ser Glu Trp Asn  
 210 215 220  
 Lys Val Arg Arg His Ser Cys Ala Val Trp Ala Gln Val Lys Asp Ser  
 225 230 235 240  
 Ser Leu Met Leu Leu Gln Met Ala Gly Val Gly Leu Gly Ser Leu Ala  
 245 250 255

939

Val Val Ile Ile Leu Thr Phe Leu Ser Phe Ser Ala Val  
 260 265

&lt;210&gt; 977

&lt;211&gt; 477

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (471)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (473)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 977

Leu Phe Ser Pro Gln Val Glu Leu Thr Lys Ala Met Val Met Glu Lys  
 1 5 10 15

Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val Arg Gln Tyr Tyr Thr  
 20 25 30

Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg Phe Tyr Gly Lys Asn  
 35 40 45

Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn Gly Lys Pro Ala Asp  
 50 55 60

Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys Val Met Ser Gln Asn  
 65 70 75 80

Phe Thr Asn Cys His Thr Lys Ile Arg His Val Asp Ala His Ala Thr  
 85 90 95

Leu Asn Asp Gly Val Val Val Gln Val Met Gly Leu Leu Ser Asn Asn  
 100 105 110

Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe Val Leu Ala Pro Glu  
 115 120 125

Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn Asp Ile Phe Arg Tyr  
 130 135 140

Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu Pro Gln Glu Glu Ser  
 145 150 155 160

940

Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln Gln Thr Pro Glu Val  
 165 170 175  
 Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln Ala Val Val Ser Asn  
 180 185 190  
 Asp Met Glu Glu His Leu Glu Glu Pro Val Ala Glu Pro Glu Pro Asp  
 195 200 205  
 Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser Glu Ile Gln Glu Glu  
 210 215 220  
 Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro Glu Asp Ala Gln Lys  
 225 230 235 240  
 Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln Thr Val Gln Glu Asp  
 245 250 255  
 Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser Lys Asn Leu Pro Pro  
 260 265 270  
 Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro His Val Val Lys Val  
 275 280 285  
 Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro Glu Ser Gln Ile Pro  
 290 295 300  
 Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg Glu Gln Arg Ile Asn  
 305 310 315 320  
 Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg Glu Ala Gly Glu Gln  
 325 330 335  
 Gly Asp Ile Glu Pro Arg Arg Met Val Arg His Pro Asp Ser His Gln  
 340 345 350  
 Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp Lys Ser Glu Leu Lys  
 355 360 365  
 Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu Leu Arg Ile Asn Ser  
 370 375 380  
 Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val Phe Asp Asp Ser Glu  
 385 390 395 400  
 Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile Met Phe Arg Gly Glu  
 405 410 415  
 Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg Ala Ala Arg Glu Gly  
 420 425 430

Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly Gly Pro Arg Gly Gly  
 435 440 445

Leu Gly Gly Gly Met Arg Gly Pro Pro Arg Gly Gly Met Val Gln Lys  
 450 455 460

Pro Gly Phe Gly Val Gly Xaa Gly Xaa Ala Pro Arg Gln  
 465 470 475

<210> 978

<211> 339

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (128)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (326)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (336)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (339)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 978

Pro Val Ala Ala Val Ser Gly Arg Ala Val Gly Gly Ser Arg Gly Gly  
 1 5 10 15

Gly Arg Gly Gly Met Ala Ala Ala Ala Gly Ala Gly Ser Gly Pro  
 20 25 30

Trp Ala Ala Gln Glu Lys Gln Phe Pro Pro Ala Leu Leu Ser Phe Phe  
 35 40 45

Ile Tyr Asn Pro Arg Phe Gly Pro Arg Glu Gly Gln Glu Glu Asn Lys  
 50 55 60

Ile Leu Phe Tyr His Pro Asn Glu Val Glu Lys Asn Glu Lys Ile Arg

942

65		70		75		80
Asn Val Gly Leu Cys Glu Ala Ile Val Gln Phe Thr Arg Thr Phe Ser						
	85			90		95
Pro Ser Lys Pro Ala Lys Ser Leu His Thr Gln Lys Asn Arg Gln Phe						
	100		105		110	
Phe Asn Glu Pro Glu Glu Asn Phe Trp Met Val Met Val Val Arg Xaa						
	115		120		125	
Pro Ile Ile Glu Lys Gln Ser Lys Asp Gly Lys Pro Val Ile Glu Tyr						
	130		135		140	
Gln Glu Glu Glu Leu Leu Asp Lys Val Tyr Ser Ser Val Leu Arg Gln						
	145		150		155	160
Cys Tyr Ser Met Tyr Lys Leu Phe Asn Gly Thr Phe Leu Lys Ala Met						
	165		170		175	
Glu Asp Gly Gly Val Lys Leu Leu Lys Glu Arg Leu Glu Lys Phe Phe						
	180		185		190	
His Arg Tyr Leu Gln Thr Leu His Leu Gln Ser Cys Asp Leu Leu Asp						
	195		200		205	
Ile Phe Gly Gly Ile Ser Phe Phe Pro Leu Asp Lys Met Thr Tyr Leu						
	210		215		220	
Lys Ile Gln Ser Phe Ile Asn Arg Met Glu Glu Ser Leu Asn Ile Val						
	225		230		235	240
Lys Tyr Thr Ala Phe Leu Tyr Asn Asp Gln Leu Ile Trp Ser Gly Leu						
	245		250		255	
Glu Gln Asp Asp Met Arg Ile Leu Tyr Lys Tyr Leu Thr Thr Ser Leu						
	260		265		270	
Phe Pro Arg His Ile Glu Pro Glu Leu Ala Gly Arg Asp Ser Pro Ile						
	275		280		285	
Arg Ala Glu Met Pro Gly Asn Leu Gln His Tyr Gly Arg Phe Leu Thr						
	290		295		300	
Gly Pro Leu Asn Leu Asn Asp Pro Asp Ala Lys Cys Arg Phe Pro Lys						
	305		310		315	320
Ile Phe Val Asn Thr Xaa Asp Thr Tyr Glu Glu Leu His Leu Ile Xaa						
	325		330		335	
Tyr Lys Xaa						

943

&lt;210&gt; 979

&lt;211&gt; 283

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 979

His Arg Glu Arg Arg Val Gly Leu Arg Cys Ala Arg Arg Thr Ser Glu  
 1 5 10 15

Ala Ala Gly Ser Gly Ala Gly Pro Pro Gly Pro Leu Gln Gly Arg Ser  
 20 25 30

Gly Ser Ser Trp Ala Pro Arg Pro Gly Arg Arg Thr Glu Glu Arg Arg  
 35 40 45

Lys Gly Ala Gly Gly Thr Arg Pro Arg Pro Ala Ala Ala Met Asn Ser  
 50 55 60

Asn Val Glu Asn Leu Pro Pro His Ile Ile Arg Leu Val Tyr Lys Glu  
 65 70 75 80

Val Thr Thr Leu Thr Ala Asp Pro Pro Asp Gly Ile Lys Val Phe Pro  
 85 90 95

Asn Glu Glu Asp Leu Thr Asp Leu Gln Val Thr Ile Glu Gly Pro Glu  
 100 105 110

Gly Thr Pro Tyr Ala Gly Gly Leu Phe Arg Met Lys Leu Leu Leu Gly  
 115 120 125

Lys Asp Phe Pro Ala Ser Pro Pro Lys Gly Tyr Phe Leu Thr Lys Ile  
 130 135 140

Phe His Pro Asn Val Gly Ala Asn Gly Glu Ile Cys Val Asn Val Leu  
 145 150 155 160

Lys Arg Asp Trp Thr Ala Glu Leu Gly Ile Arg His Val Leu Leu Thr  
 165 170 175

Ile Lys Cys Leu Leu Ile His Pro Asn Pro Glu Ser Ala Leu Asn Glu  
 180 185 190

Glu Ala Gly Arg Leu Leu Leu Glu Asn Tyr Glu Glu Tyr Ala Ala Arg  
 195 200 205

Ala Arg Leu Leu Thr Glu Ile His Gly Gly Ala Gly Gly Pro Ser Gly  
 210 215 220

944

Arg Ala Glu Ala Gly Arg Ala Leu Ala Ser Gly Thr Glu Ala Ser Ser  
225 230 235 240

Thr Asp Pro Gly Ala Pro Gly Gly Pro Gly Gly Ala Glu Gly Pro Met  
245 250 255

Ala Lys Lys His Ala Gly Glu Arg Asp Lys Lys Leu Ala Ala Lys Lys  
260 265 270

Lys Thr Asp Lys Lys Arg Ala Leu Arg Arg Leu  
275 280

<210> 980

<211> 353

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (333)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (346)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 980

Arg Lys Gln Cys Gln Asp Ser Lys Asp Ser Asn His Leu Pro Lys Met  
1 5 10 15

Ser Leu Ser Ala Phe Thr Leu Phe Leu Ala Leu Ile Gly Gly Thr Ser  
20 25 30

Gly Gln Tyr Tyr Asp Tyr Asp Phe Pro Leu Ser Ile Tyr Gly Gln Ser  
35 40 45

Ser Pro Asn Cys Ala Pro Glu Cys Asn Cys Pro Glu Ser Tyr Pro Ser  
50 55 60

Ala Met Tyr Cys Asp Glu Leu Lys Leu Lys Ser Val Pro Met Val Pro  
65 70 75 80

Pro Gly Ile Lys Tyr Leu Tyr Leu Arg Asn Asn Gln Ile Asp His Ile  
85 90 95

Asp Glu Lys Ala Phe Glu Asn Val Thr Asp Leu Gln Trp Leu Ile Leu  
100 105 110

945

Asp His Asn Leu Leu Glu Asn Ser Lys Ile Lys Gly Arg Val Phe Ser  
 115 120 125  
 Lys Leu Lys Gln Leu Lys Lys Leu His Ile Asn His Asn Asn Leu Thr  
 130 135 140  
 Glu Ser Val Gly Pro Leu Pro Lys Ser Leu Glu Asp Leu Gln Leu Thr  
 145 150 155 160  
 His Asn Lys Ile Thr Lys Leu Gly Ser Phe Glu Gly Leu Val Asn Leu  
 165 170 175  
 Thr Phe Ile His Leu Gln His Asn Arg Leu Lys Glu Asp Ala Val Ser  
 180 185 190  
 Ala Ala Phe Lys Gly Leu Lys Ser Leu Glu Tyr Leu Asp Leu Ser Phe  
 195 200 205  
 Asn Gln Ile Ala Arg Leu Pro Ser Gly Leu Pro Val Ser Leu Leu Thr  
 210 215 220  
 Leu Tyr Leu Asp Asn Asn Lys Ile Ser Asn Ile Pro Asp Glu Tyr Phe  
 225 230 235 240  
 Lys Arg Phe Asn Ala Leu Gln Tyr Leu Arg Leu Ser His Asn Glu Leu  
 245 250 255  
 Ala Asp Ser Gly Ile Pro Gly Asn Ser Phe Asn Val Ser Ser Leu Val  
 260 265 270  
 Glu Leu Asp Leu Ser Tyr Asn Lys Leu Lys Asn Ile Pro Thr Val Asn  
 275 280 285  
 Glu Asn Leu Glu Asn Tyr Tyr Leu Glu Val Asn Gln Leu Glu Lys Phe  
 290 295 300  
 Asp Ile Lys Ser Phe Cys Lys Ile Leu Gly Pro Leu Ser Tyr Ser Lys  
 305 310 315 320  
 Ile Lys His Leu Arg Leu Asp Gly Asn Arg Ile Ser Xaa Thr Ser Leu  
 325 330 335  
 Pro Pro Asp Met Tyr Glu Cys Leu Arg Xaa Ala Asn Glu Val Thr Leu  
 340 345 350

Asn



946

&lt;210&gt; 981

&lt;211&gt; 343

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (343)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 981

Asn	Leu	Thr	Lys	Asn	Met	Thr	Ala	Leu	Ser	Ser	Glu	Asn	Cys	Ser	Phe
1				5					10					15	

Gln	Tyr	Gln	Leu	Arg	Gln	Thr	Asn	Gln	Pro	Leu	Asp	Val	Asn	Tyr	Leu
			20					25					30		

Leu	Phe	Leu	Ile	Ile	Leu	Gly	Lys	Ile	Leu	Leu	Asn	Ile	Leu	Thr	Leu
		35					40					45			

Gly	Met	Arg	Arg	Lys	Asn	Thr	Cys	Gln	Asn	Phe	Met	Glu	Tyr	Phe	Cys
	50					55					60				

Ile	Ser	Leu	Ala	Phe	Val	Asp	Leu	Leu	Leu	Val	Asn	Ile	Ser	Ile	
65					70					75				80	

Ile	Leu	Tyr	Phe	Arg	Asp	Phe	Val	Leu	Leu	Ser	Ile	Arg	Phe	Thr	Lys
			85						90					95	

Tyr	His	Ile	Cys	Leu	Phe	Thr	Gln	Ile	Ile	Ser	Phe	Thr	Tyr	Gly	Phe
			100					105					110		

Leu	His	Tyr	Pro	Val	Phe	Leu	Thr	Ala	Cys	Ile	Asp	Tyr	Cys	Leu	Asn
		115					120					125			

Phe	Ser	Lys	Thr	Thr	Lys	Leu	Ser	Phe	Lys	Cys	Gln	Lys	Leu	Phe	Tyr
	130					135					140				

Phe	Phe	Thr	Val	Ile	Leu	Ile	Trp	Ile	Ser	Val	Leu	Ala	Tyr	Val	Leu
145					150					155					160

Gly	Asp	Pro	Ala	Ile	Tyr	Gln	Ser	Leu	Lys	Ala	Gln	Asn	Ala	Tyr	Ser
			165						170					175	

Arg	His	Cys	Pro	Phe	Tyr	Val	Ser	Ile	Gln	Ser	Tyr	Trp	Leu	Ser	Phe
			180						185				190		

Phe	Met	Val	Met	Ile	Leu	Phe	Val	Ala	Phe	Ile	Thr	Cys	Trp	Glu	Glu
		195					200					205			

Val	Thr	Thr	Leu	Val	Gln	Ala	Ile	Arg	Ile	Thr	Ser	Tyr	Met	Asn	Glu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

947

210	215	220
Thr Ile Leu Tyr Phe Pro Phe Ser Ser His Ser Ser Tyr Thr Val Arg		
225	230	235 240
Ser Lys Lys Ile Phe Leu Ser Lys Leu Ile Val Cys Phe Leu Ser Thr		
	245	250 255
Trp Leu Pro Phe Val Leu Leu Gln Val Ile Ile Val Leu Leu Lys Val		
	260	265 270
Gln Ile Pro Ala Tyr Ile Glu Met Asn Ile Pro Trp Leu Tyr Phe Val		
	275	280 285
Asn Ser Phe Leu Ile Ala Thr Val Tyr Trp Phe Asn Cys His Lys Leu		
	290	295 300
Asn Leu Lys Asp Ile Gly Leu Pro Leu Asp Pro Phe Val Asn Trp Lys		
	305	310 315 320
Cys Cys Phe Ile Pro Leu Thr Ile Pro Asn Leu Glu Gln Ile Glu Lys		
	325	330 335
Pro Ile Ser Ile Met Ile Xaa		
	340	

&lt;210&gt; 982

&lt;211&gt; 142

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (114)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (121)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (122)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (126)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (127)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (132)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 982

Gly	Leu	Pro	Pro	Ser	Thr	Phe	Leu	His	Ser	Ala	Val	Ser	Thr	Leu	Pro
1				5					10					15	

His	Arg	Pro	Ser	Pro	Pro	Ser	Leu	Leu	Pro	Ala	Pro	Cys	Lys	Pro	Leu
			20					25					30		

Arg	Leu	Gly	Leu	Ala	Thr	Val	Pro	Ala	Gly	Ser	Pro	Gly	Leu	Gly	Val
	35						40					45			

Gly	Asp	Ser	Leu	Gln	Ala	Arg	Ser	Pro	Glu	Thr	Ser	Glu	Gly	His	Pro
	50					55					60				

Leu	Arg	Val	Ala	Arg	Pro	Pro	Val	Ala	Asn	Leu	Ser	Ala	Ala	Ser	Ala
65					70					75					80

Thr	Ser	Pro	Ala	Gly	Pro	Trp	Phe	Arg	Trp	Pro	Pro	Arg	Cys	Leu	Ala
				85					90					95	

Glu	Thr	Arg	His	Gly	Pro	Ser	Ala	Gly	Pro	His	Xaa	Phe	Pro	Xaa	Pro
			100					105						110	

Gly	Xaa	Trp	His	Cys	Ser	Arg	Gln	Xaa	Xaa	Gly	His	Gln	Xaa	Xaa	Asn
		115					120					125			

Arg	Thr	Gln	Xaa	Pro	Ala	Gln	Thr	Ala	Ala	Gly	Met	Gly	Ala
	130					135					140		

949

<210> 983  
 <211> 193  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (72)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (135)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (139)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 983  
 Val Asn Phe Lys Ala Phe Glu Met Gly Lys Asp Tyr Tyr Cys Ile Leu  
   1                  5                  10                  15  
  
 Gly Ile Glu Lys Gly Ala Ser Asp Glu Asp Ile Lys Lys Ala Tyr Arg  
           20                  25                  30  
  
 Lys Gln Ala Leu Lys Phe His Pro Asp Lys Asn Lys Ser Pro Gln Ala  
           35                  40                  45  
  
 Glu Glu Lys Phe Lys Glu Val Ala Glu Ala Tyr Glu Val Leu Ser Asp  
   50                  55                  60  
  
 Pro Lys Lys Arg Glu Ile Tyr Xaa Gln Phe Gly Glu Glu Gly Leu Lys  
   65                  70                  75                  80  
  
 Gly Gly Ala Gly Gly Thr Asp Gly Gln Gly Gly Thr Phe Arg Tyr Thr  
                   85                  90                  95  
  
 Phe His Gly Asp Pro His Ala Thr Phe Ala Ala Phe Phe Gly Gly Ser  
           100                  105                  110  
  
 Asn Pro Phe Glu Ile Phe Phe Gly Arg Arg Met Gly Gly Gly Arg Asp  
   115                  120                  125  
  
 Ser Glu Glu Met Glu Ile Xaa Gly Asp Pro Xaa Ser Ala Phe Gly Phe  
   130                  135                  140  
  
 Ser Met Asn Gly Tyr Pro Arg Asp Arg Asn Ser Val Gly Pro Ser Arg  
   145                  150                  155                  160

950

Leu Lys Gln Asp Pro Pro Val Ile His Glu Leu Arg Val Ser Leu Glu  
 165 170 175

Glu Ile Tyr Ser Gly Cys Thr Lys Arg Asp Glu Arg Phe Leu Glu Lys  
 180 185 190

Gly

<210> 984

<211> 402

<212> PRT

<213> Homo sapiens

<400> 984

Lys Ser Tyr Glu Met Glu Leu Glu Glu Gly Lys Ala Gly Ser Gly Leu  
 1 5 10 15

Arg Gln Tyr Tyr Leu Ser Lys Ile Glu Glu Leu Gln Leu Ile Val Asn  
 20 25 30

Asp Lys Ser Gln Asn Leu Arg Arg Leu Gln Ala Gln Arg Asn Glu Leu  
 35 40 45

Asn Ala Lys Val Arg Leu Leu Arg Glu Glu Leu Gln Leu Leu Gln Glu  
 50 55 60

Gln Gly Ser Tyr Val Gly Glu Val Val Arg Ala Met Asp Lys Lys Lys  
 65 70 75 80

Val Leu Val Lys Val His Pro Glu Gly Lys Phe Val Val Asp Val Asp  
 85 90 95

Lys Asn Ile Asp Ile Asn Asp Val Thr Pro Asn Cys Arg Val Ala Leu  
 100 105 110

Arg Asn Asp Ser Tyr Thr Leu His Lys Ile Leu Pro Asn Lys Val Asp  
 115 120 125

Pro Leu Val Ser Leu Met Met Val Glu Lys Val Pro Asp Ser Thr Tyr  
 130 135 140

Glu Met Ile Gly Gly Leu Asp Lys Gln Ile Lys Glu Ile Lys Glu Val  
 145 150 155 160

Ile Glu Leu Pro Val Lys His Pro Glu Leu Phe Glu Ala Leu Gly Ile  
 165 170 175

951

Ala Gln Pro Lys Gly Val Leu Leu Tyr Gly Pro Pro Gly Thr Gly Lys  
                   180                  185                  190  
 Thr Leu Leu Ala Arg Ala Val Ala His His Thr Asp Cys Thr Phe Ile  
                   195                  200                  205  
 Arg Val Ser Gly Ser Glu Leu Val Gln Lys Phe Ile Gly Glu Gly Ala  
                   210                  215                  220  
 Arg Met Val Arg Glu Leu Phe Val Met Ala Arg Glu His Ala Pro Ser  
                   225                  230                  235                  240  
 Ile Ile Phe Met Asp Glu Ile Asp Ser Ile Gly Ser Ser Arg Leu Glu  
                   245                  250                  255  
 Gly Gly Ser Gly Gly Asp Ser Glu Val Gln Arg Thr Met Leu Glu Leu  
                   260                  265                  270  
 Leu Asn Gln Leu Asp Gly Phe Glu Ala Thr Lys Asn Ile Lys Val Ile  
                   275                  280                  285  
 Met Ala Thr Asn Arg Ile Asp Ile Leu Asp Ser Ala Leu Leu Arg Pro  
                   290                  295                  300  
 Gly Arg Ile Asp Arg Lys Ile Glu Phe Pro Pro Pro Asn Glu Glu Ala  
                   305                  310                  315                  320  
 Arg Leu Asp Ile Leu Lys Ile His Ser Arg Lys Met Asn Leu Thr Arg  
                   325                  330                  335  
 Gly Ile Asn Leu Arg Lys Ile Ala Glu Leu Met Pro Gly Ala Ser Gly  
                   340                  345                  350  
 Ala Glu Val Lys Gly Val Cys Thr Glu Ala Gly Met Tyr Ala Leu Arg  
                   355                  360                  365  
 Glu Arg Arg Val His Val Thr Gln Glu Asp Phe Glu Met Ala Val Ala  
                   370                  375                  380  
 Lys Val Met Gln Lys Asp Ser Glu Lys Asn Met Ser Ile Lys Lys Leu  
                   385                  390                  395                  400  
 Trp Lys

&lt;210&gt; 985

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

952

&lt;400&gt; 985

Arg Arg Arg Arg Trp His Pro Gly Pro Gly Gly Pro Arg Arg Thr Ala  
 1 5 10 15

Gly Lys Gly Pro Arg Lys Val Ala Ser Ala Ser Ala Ala Ala Ser Thr  
 20 25 30

Leu Ser Glu Pro Pro Arg Arg Thr Gln Glu Ser Arg Thr Arg Thr Arg  
 35 40 45

Ala Leu Gly Leu Pro Thr Leu Pro Met Glu Lys Leu Ala Ala Ser Thr  
 50 55 60

Glu Pro Gln Gly Pro Arg Pro Val Leu Gly Arg Glu Ser Val Gln Val  
 65 70 75 80

Pro Asp Asp Gln Asp Phe Arg Ser Phe Arg Ser Glu Cys Glu Ala Glu  
 85 90 95

Val Gly Trp Asn Leu Thr Tyr Ser Arg Ala Gly Val Ser Val Trp Val  
 100 105 110

Gln Ala Val Glu Met Asp Arg Thr Leu His Lys Ile Lys Cys Arg Met  
 115 120 125

Glu Cys Cys Asp Val Pro Ala Glu Thr Leu Tyr Asp Val Leu His Asp  
 130 135 140

Ile Glu Tyr Arg Lys Lys Trp Asp Ser Asn Val Ile Glu Thr Phe Asp  
 145 150 155 160

Ile Ala Arg Leu Thr Val Asn Ala Asp Val Gly Tyr Tyr Ser Trp Arg  
 165 170 175

Cys Pro Lys Pro Leu Lys Asn Arg Asp Val Ile Thr Leu Arg Ser Trp  
 180 185 190

Leu Pro Met Gly Ala Asp Tyr Ile Ile Met Asn Tyr Ser Val Lys His  
 195 200 205

Pro Lys Tyr Pro Pro Arg Lys Asp Leu Val Arg Ala Val Ser Ile Gln  
 210 215 220

Thr Gly Tyr Leu Ile Gln Ser Thr Gly Pro Lys Ser Cys Val Ile Thr  
 225 230 235 240

Tyr Leu Ala Gln Val Asp Pro Lys Gly Ser Leu Pro Lys Trp Val Val  
 245 250 255

Asn Lys Ser Ser Gln Phe Leu Ala Pro Lys Ala Met Lys Lys Met Tyr

953

260                      265                      270  
 Lys Ala Cys Leu Lys Tyr Pro Glu Trp Lys Gln Lys His Leu Pro His  
           275                      280                      285  
 Phe Lys Pro Trp Leu His Pro Glu Gln Ser Pro Leu Pro Ser Leu Ala  
           290                      295                      300  
 Leu Ser Glu Leu Ser Val Gln His Ala Asp Ser Leu Glu Asn Ile Asp  
 305                      310                      315                      320  
 Glu Ser Ala Val Ala Glu Ser Arg Glu Glu Arg Met Gly Gly Ala Gly  
                           325                      330                      335  
 Gly Glu Gly Ser Asp Asp Asp Thr Ser Leu Thr  
                           340                      345

&lt;210&gt; 986

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 986

Ala Ser Ile Cys Ala Asp Ala Lys Leu Trp Thr Met Tyr Ala Arg Pro  
   1                      5                      10                      15  
 Ser Asn Arg Gln Arg Cys Leu Gly Ser Lys His Thr Glu Arg Thr Trp  
           20                      25                      30  
 Thr Ala Trp Xaa Arg Ser Leu Ile Arg Pro Phe Ser Met His Ile Leu  
           35                      40                      45  
 Pro Lys Gln Ser Gln Ile Pro Leu Lys Gly Ala Asp Ser Ile Ser Ser  
           50                      55                      60  
 Ser Val Gln Thr Leu Arg Ala Glu Arg Ser Gly Ser Gly Ser His Val  
           65                      70                      75                      80  
 Thr Ala Gln Asn Asn Leu Arg Asn Pro Leu Cys Pro Glu Gly Ser Leu  
                           85                      90                      95  
 Thr Ser Pro Ser Gly Ser Glu Gln Ser Leu  
           100                      105



954

&lt;210&gt; 987

&lt;211&gt; 172

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 987

Thr Pro Arg Gly Ala Val Lys Pro Ser Ala Asn Lys Tyr Pro Ile Phe  
 1 5 10 15

Phe Phe Gly Thr His Glu Thr Ala Phe Leu Gly Pro Lys Asp Leu Phe  
 20 25 30

Pro Tyr Lys Glu Tyr Lys Asp Lys Phe Gly Lys Ser Asn Lys Arg Lys  
 35 40 45

Gly Phe Asn Glu Gly Leu Trp Glu Ile Glu Asn Asn Pro Gly Val Lys  
 50 55 60

Phe Thr Gly Tyr Gln Ala Ile Gln Gln Gln Ser Ser Ser Glu Thr Glu  
 65 70 75 80

Gly Glu Gly Gly Asn Thr Ala Asp Ala Ser Ser Glu Glu Glu Gly Asp  
 85 90 95

Arg Val Glu Glu Asp Gly Lys Gly Lys Arg Lys Asn Glu Lys Ala Gly  
 100 105 110

Ser Lys Arg Lys Lys Ser Tyr Thr Ser Lys Lys Ser Ser Lys Gln Ser  
 115 120 125

Arg Lys Ser Pro Gly Asp Glu Asp Asp Lys Asp Cys Lys Glu Glu Glu  
 130 135 140

Asn Lys Ser Ser Ser Glu Gly Gly Asp Ala Gly Asn Asp Thr Arg Asn  
 145 150 155 160

Thr Thr Ser Asp Leu Gln Lys Thr Ser Glu Gly Thr  
 165 170

&lt;210&gt; 988

&lt;211&gt; 238

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (146)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 988

Ala Lys Gln Asp Pro Val Pro Glu Gln Glu Met Ser Pro Ser Ile Ser  
1 5 10 15

Asp Pro Cys Leu Gly Gln Ala Leu Met Gly Gly Pro Ser Phe Lys Ala  
20 25 30

Val Val Gly Thr Ala Pro Pro Asn Ala Ser Leu Ser Phe Leu Pro Ile  
35 40 45

His Gln Tyr Thr Ala Gly Pro Phe Leu Val Phe Val Gln Gln Glu Thr  
50 55 60

His Phe Trp Trp Asp Met Pro Ser Ser Ala Thr Gly Pro Leu Thr Pro  
65 70 75 80

Cys Ile Ser Val Leu Pro Val Ser Ala Gly Thr Asp Ser Lys Gly Lys  
85 90 95

Pro Ser Val Trp Xaa Ile Gly Gly Trp Glu Gln Arg Gly Glu Asn Ala  
100 105 110

Val Leu Ser Phe Cys Leu Gly Ile Pro His Thr Thr Trp Val Leu Pro  
115 120 125

Gly Lys Pro Val Leu Ser Lys Thr Met Asp Leu Ala Ser Pro Thr Gly  
130 135 140

Leu Xaa Ser Gln His Leu Arg Glu Gly Gly Trp Lys Arg Leu Cys Pro  
145 150 155 160

His Phe Glu Leu Gln Ala Gly Ser Ala Ala Leu Lys Pro Ser Ser Asp  
165 170 175

Phe Leu Thr Gln Asp Pro Ala Pro Gly Arg Arg Arg Val Gly Ala Gly  
180 185 190

Leu Val Gly Gln Lys Glu Ala Ser Ala Gly Leu Glu Asp Pro Ser Ser  
195 200 205

Thr Ser His Ser Val Ser Ser Ser Trp Glu Asn Leu Cys Gln Ala Arg  
210 215 220

Ala Val Ile Gly Pro His Glu Val Ser Glu Ala Pro Ser Trp

956

225

230

235

&lt;210&gt; 989

&lt;211&gt; 74

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 989

Ser Leu Ile Lys Ala Leu Tyr Ile Leu Tyr Gly Phe Arg His His His  
 1 5 10 15

Thr Lys Lys Leu Thr Pro Ser Ile Pro Val Phe Val Gly Gln Ala Ser  
 20 25 30

Phe Phe Ser Pro Cys Ser Val Ser His Thr Val Cys Leu Gln Lys Leu  
 35 40 45

Leu Ile Gly Ala Lys Tyr Asn Cys Gln Tyr Asn Leu Lys Thr Thr Met  
 50 55 60

Cys Pro Arg Arg Pro Thr Cys Leu Phe Pro  
 65 70

&lt;210&gt; 990

&lt;211&gt; 295

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 990

Ala Pro Ala Arg Pro Gly Ser Leu Pro Ser Thr Arg Ser Ala Pro Leu  
 1 5 10 15

Val Pro Ser Ser Arg Arg Arg Pro Ala Glu Ser Pro Leu Arg Ser Arg  
 20 25 30

Arg Cys Arg Gly Asp Met Val Leu Cys Val Gln Gly Pro Arg Pro Leu  
 35 40 45

Leu Ala Val Glu Arg Thr Gly Gln Arg Pro Leu Trp Ala Pro Ser Leu  
 50 55 60

Glu Leu Pro Lys Pro Val Met Gln Pro Leu Pro Ala Gly Ala Phe Leu  
 65 70 75 80

Glu Glu Val Ala Glu Gly Thr Pro Ala Gln Thr Glu Ser Glu Pro Lys  
 85 90 95

957

Val Leu Asp Pro Glu Glu Asp Leu Leu Cys Ile Ala Lys Thr Phe Ser  
 100 105 110  
 Tyr Leu Arg Glu Ser Gly Trp Tyr Trp Gly Ser Ile Thr Ala Ser Glu  
 115 120 125  
 Ala Arg Gln His Leu Gln Lys Met Pro Glu Gly Thr Phe Leu Val Arg  
 130 135 140  
 Asp Ser Thr His Pro Ser Tyr Leu Phe Thr Leu Ser Val Lys Thr Thr  
 145 150 155 160  
 Arg Gly Pro Thr Asn Val Arg Ile Glu Tyr Ala Asp Ser Ser Phe Arg  
 165 170 175  
 Leu Asp Ser Asn Cys Leu Ser Arg Pro Arg Ile Leu Ala Phe Pro Asp  
 180 185 190  
 Val Val Ser Leu Val Gln His Tyr Val Ala Ser Cys Thr Ala Asp Thr  
 195 200 205  
 Arg Ser Asp Ser Pro Asp Pro Ala Pro Thr Pro Ala Leu Pro Met Pro  
 210 215 220  
 Lys Glu Asp Ala Pro Ser Asp Pro Ala Leu Pro Ala Pro Pro Pro Ala  
 225 230 235 240  
 Thr Ala Val His Leu Lys Leu Val Gln Pro Phe Val Arg Arg Ser Ser  
 245 250 255  
 Ala Arg Ser Leu Gln His Leu Cys Arg Leu Val Ile Asn Arg Leu Val  
 260 265 270  
 Ala Asp Val Asp Cys Leu Pro Leu Pro Arg Arg Met Ala Asp Tyr Leu  
 275 280 285  
 Arg Gln Tyr Pro Phe Gln Leu  
 290 295

&lt;210&gt; 991

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 991

Leu His Lys Val Ser Ile Leu Leu Tyr Ser Ala Val Leu Val Ser Phe  
 1 5 10 15

Ser Cys Ile Gly Phe His Cys Ile Tyr Ser Leu Phe Met Leu Asn Leu

958

20                      25                      30  
 Ala Lys Asp Glu His Cys Pro Pro Leu Lys Cys Leu Cys His Phe Glu  
          35                      40                      45  
 Phe Cys Ala Asn Phe Val Ala Arg Met Arg  
          50                      55

&lt;210&gt; 992

&lt;211&gt; 203

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 992

Ala His Ala Ser Pro Thr Arg Xaa Glu Ala Arg Val Val Val Val Arg  
   1                                  5                                  10                                  15  
 Cys Leu Pro Ala Cys Val Arg Asp Leu Pro Asp Ser Val Ala Ala Met  
                                   20                                  25                                  30  
 Ala Ser Asp Glu Gly Lys Leu Phe Val Gly Gly Leu Ser Phe Asp Thr  
                                   35                                  40                                  45  
 Asn Glu Gln Ser Leu Glu Gln Val Phe Ser Lys Tyr Gly Gln Ile Ser  
                                   50                                  55                                  60  
 Glu Val Val Val Val Lys Asp Arg Glu Thr Gln Arg Ser Arg Gly Phe  
                                   65                                  70                                  75                                  80  
 Gly Phe Val Thr Phe Glu Asn Ile Asp Asp Ala Lys Asp Ala Met Met  
                                   85                                  90                                  95  
 Ala Met Asn Gly Lys Ser Val Asp Gly Arg Gln Ile Arg Val Asp Gln  
                                   100                                  105                                  110  
 Ala Gly Lys Ser Ser Asp Asn Arg Ser Arg Gly Tyr Arg Gly Gly Ser  
                                   115                                  120                                  125  
 Ala Gly Gly Arg Gly Phe Phe Arg Gly Gly Arg Gly Arg Gly Arg Gly  
                                   130                                  135                                  140  
 Phe Ser Arg Gly Gly Gly Asp Arg Gly Tyr Gly Gly Asn Arg Phe Glu  
                                   145                                  150                                  155                                  160

959

Ser Arg Ser Gly Gly Tyr Gly Gly Ser Arg Asp Tyr Tyr Ser Ser Arg  
                     165                    170                    175

Ser Gln Ser Gly Gly Tyr Ser Asp Arg Ser Ser Gly Gly Ser Tyr Arg  
                     180                    185                    190

Asp Ser Tyr Asp Ser Tyr Ala Thr His Asn Glu  
                     195                    200

&lt;210&gt; 993

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 993

Gly Gly Leu Ala Trp Arg Ala Leu Arg Thr Ser Gly Thr Leu Leu Arg  
   1                    5                    10                    15

Val Glu Arg Leu Leu Leu Glu Asp Tyr Cys Pro Glu Glu Lys Met Phe  
                     20                    25                    30

Gly Phe His Lys Pro Lys Met Tyr Arg Ser Ile Glu Gly Cys Cys Ile  
                     35                    40                    45

Cys Arg Ala Lys Ser Ser Ser Ser Arg Phe Thr Asp Ser Lys Arg Tyr  
                     50                    55                    60

Glu Lys Asp Phe Gln Ser Cys Phe Gly Leu His Glu Thr Arg Ser Gly  
   65                    70                    75                    80

Asp Ile Cys Asn Ala Cys Val Leu Leu Val Lys Arg Trp Lys Lys Leu  
                     85                    90                    95

Pro Ala Gly Ser Lys Lys Asn Trp Asn His Val Val Asp Ala Arg Ala  
                     100                    105                    110

Gly Pro Ser Leu Lys Thr Thr Leu Lys Pro Lys Lys Val Lys Thr Leu  
                     115                    120                    125

Ser Gly Asn Arg Ile Lys Ser Asn Gln Ile Ser Lys Leu Gln Lys Glu  
                     130                    135                    140

Phe Lys Arg His Asn Ser Asp Ala His Ser Thr Thr Ser Ser Ala Ser  
   145                    150                    155                    160

Pro Ala Gln Ser Pro Cys Tyr Ser Asn Gln Ser Asp Asp Gly Ser Asp  
                     165                    170                    175

Thr Glu Met Ala Ser Gly Ser Asn Arg Thr Pro Val Phe Ser Phe Leu

960

180						185						190					
Asp	Leu	Thr	Tyr	Trp	Lys	Arg	Gln	Lys	Ile	Cys	Cys	Gly	Ile	Ile	Tyr		
195						200						205					
Lys	Gly	Arg	Phe	Gly	Glu	Val	Leu	Ile	Asp	Thr	His	Leu	Phe	Lys	Pro		
210						215				220							
Cys	Cys	Ser	Asn	Lys	Lys	Ala	Ala	Ala	Glu	Lys	Pro	Glu	Glu	Gln	Gly		
225		230				235					240						
Gln	Ser	Leu	Cys	Pro	Ser	Pro	Leu	Arg	Ser	Gly	Asp						
245						250											

<210> 994

<211> 170

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (5)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 994

Arg	Thr	Arg	Gly	Xaa	Asp	Thr	Gln	Pro	Thr	Val	Cys	Thr	Asp	Ala	Pro
1				5					10					15	
Ser	Leu	Leu	Pro	Leu	Ser	Arg	Leu	His	Leu	Arg	Gly	Ser	Trp	Asp	Arg
			20					25					30		
Arg	Ser	Val	Ala	Asn	Met	Gln	Leu	Phe	Val	Arg	Ala	Gln	Glu	Leu	His
		35					40					45			
Thr	Phe	Glu	Val	Thr	Gly	Gln	Glu	Thr	Val	Ala	Gln	Ile	Lys	Ala	His
	50					55					60				
Val	Ala	Ser	Leu	Glu	Gly	Ile	Ala	Pro	Glu	Asp	Gln	Val	Val	Leu	Leu
65					70					75					80
Ala	Gly	Ala	Pro	Leu	Glu	Asp	Glu	Ala	Thr	Leu	Gly	Gln	Cys	Gly	Val
				85					90					95	
Glu	Ala	Leu	Thr	Thr	Leu	Glu	Val	Ala	Gly	Arg	Met	Leu	Gly	Gly	Lys
			100					105					110		
Val	His	Gly	Ser	Leu	Ala	Arg	Ala	Gly	Lys	Val	Arg	Gly	Gln	Thr	Pro
		115					120					125			

961

Lys Val Ala Lys Gln Glu Lys Lys Lys Lys Lys Thr Gly Arg Ala Lys  
 130 135 140

Arg Arg Met Gln Tyr Asn Arg Arg Phe Val Asn Val Val Pro Thr Phe  
 145 150 155 160

Gly Lys Lys Lys Gly Pro Asn Ala Asn Ser  
 165 170

&lt;210&gt; 995

&lt;211&gt; 156

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 995

Gly Ser Gly Thr His Pro Ala Arg Ala Ala Pro Ala Pro His Ala Arg  
 1 5 10 15

Ala Ser Phe Ser Arg Pro Leu Ala Pro Arg Arg Ser His Leu Ser Ser  
 20 25 30

Leu Ala His Ala Arg Pro Ala Arg Glu Pro Arg Arg Arg Leu Gly Pro  
 35 40 45

Ala Glu Ala Pro Pro Arg His Val Phe Ala Ser Arg Arg Lys Leu Glu  
 50 55 60

Thr Lys Ala Gly His Pro Pro Ala Val Lys Ala Gly Gly Met Arg Ile  
 65 70 75 80

Val Gln Lys His Pro His Thr Gly Asp Thr Lys Glu Glu Lys Asp Lys  
 85 90 95

Asp Asp Gln Glu Trp Glu Ser Pro Ser Pro Pro Lys Pro Thr Val Phe  
 100 105 110

Ile Ser Gly Val Ile Ala Arg Gly Asp Lys Asp Phe Pro Pro Ala Ala  
 115 120 125

Ala Gln Val Ala His Gln Lys Pro His Ala Ser Met Asp Lys His Pro  
 130 135 140

Ser Pro Arg Thr Gln His Ile Gln Gln Pro Arg Lys  
 145 150 155

&lt;210&gt; 996

&lt;211&gt; 217



962

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 996

Asn Ser Ala Glu Gln Glu Gly Ser Gln Trp Ser Leu Pro Val Leu His  
 1 5 10 15

Ser Val Pro Asp Pro Ala Cys Leu Thr Leu Xaa Arg Val Ser Lys Gly  
 20 25 30

Leu Ala Ala Val Arg Ser Ser Val Pro Arg Ala Gly Gly Val Ser Arg  
 35 40 45

Arg Leu Ala Ala Val Arg Ser Thr Val Leu Cys Arg Ala Val Gly Cys  
 50 55 60

Ile Leu Ala Glu Leu Leu Ala His Arg Pro Leu Leu Pro Gly Thr Ser  
 65 70 75 80

Glu Ile His Gln Ile Asp Leu Ile Val Gln Leu Leu Gly Thr Pro Ser  
 85 90 95

Glu Asn Ile Trp Pro Gly Phe Ser Lys Leu Pro Leu Val Gly Gln Tyr  
 100 105 110

Ser Leu Arg Lys Gln Pro Tyr Asn Asn Leu Lys His Lys Phe Pro Trp  
 115 120 125

Leu Ser Glu Ala Gly Leu Arg Cys Cys Thr Ser Cys Ser Cys Thr Thr  
 130 135 140

Leu Arg Lys Gly Arg Arg Pro Gly Thr Ala Trp Arg Ala Pro Ile Ser  
 145 150 155 160

Arg Arg Ser Pro Tyr Pro Val Ser Arg Ser Ser Cys Arg Pro Phe Pro  
 165 170 175

Thr Thr Ala Thr Ser Gly Pro Pro Gln Pro Pro Pro Arg Ala Arg Ala  
 180 185 190

Ser Ala Val Asn Pro Asp Gly Gly Pro Gly Thr Arg Leu Tyr Ser His  
 195 200 205

Thr Arg Ser Ser Asp Gln Trp Cys Leu  
 210 215

&lt;210&gt; 997

&lt;211&gt; 466

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 997

Val Ser Pro Arg Ala Gly Gly Ala Gly Asn Asn Arg Gly Arg Ala His  
 1 5 10 15

Arg Ala Ser Ser Cys Ser Leu Pro Ala Pro Pro Ala Thr Leu Asp Pro  
 20 25 30

Arg Ile Pro Pro Ala Arg Leu Pro Ala Met Ala Asp Lys Glu Ala Ala  
 35 40 45

Phe Asp Asp Ala Val Glu Glu Arg Val Ile Asn Glu Glu Tyr Lys Ile  
 50 55 60

Trp Lys Lys Asn Thr Pro Phe Leu Tyr Asp Leu Val Met Thr His Ala  
 65 70 75 80

Leu Glu Trp Pro Ser Leu Thr Ala Gln Trp Leu Pro Asp Val Thr Arg  
 85 90 95

Pro Glu Gly Lys Asp Phe Ser Ile His Arg Leu Val Leu Gly Thr His  
 100 105 110

Thr Ser Asp Glu Gln Asn His Leu Val Ile Ala Ser Val Gln Leu Pro  
 115 120 125

Asn Asp Asp Ala Gln Phe Asp Ala Ser His Tyr Asp Ser Glu Lys Gly  
 130 135 140

Glu Phe Gly Gly Phe Gly Ser Val Ser Gly Lys Ile Glu Ile Glu Ile  
 145 150 155 160

Lys Ile Asn His Glu Gly Glu Val Asn Arg Ala Arg Tyr Met Pro Gln  
 165 170 175

Asn Pro Cys Ile Ile Ala Thr Lys Thr Pro Ser Ser Asp Val Leu Val  
 180 185 190

Phe Asp Tyr Thr Lys His Pro Ser Lys Pro Asp Pro Ser Gly Glu Cys  
 195 200 205

Asn Pro Asp Leu Arg Leu Arg Gly His Gln Lys Glu Gly Tyr Gly Leu  
 210 215 220

Ser Trp Asn Pro Asn Leu Ser Gly His Leu Leu Ser Ala Ser Asp Asp

964

225                      230                      235                      240  
 His Thr Ile Cys Leu Trp Asp Ile Ser Ala Val Pro Lys Glu Gly Lys  
                                  245                      250                      255  
 Val Val Asp Ala Lys Thr Ile Phe Thr Gly His Thr Ala Val Val Glu  
                                  260                      265                      270  
 Asp Val Ser Trp His Leu Leu His Glu Ser Leu Phe Gly Ser Val Ala  
                                  275                      280                      285  
 Asp Asp Gln Lys Leu Met Ile Trp Asp Thr Arg Ser Asn Asn Thr Ser  
                                  290                      295                      300  
 Lys Pro Ser His Ser Val Asp Ala His Thr Ala Glu Val Asn Cys Leu  
 305                                   310                      315                      320  
 Ser Phe Asn Pro Tyr Ser Glu Phe Ile Leu Ala Thr Gly Ser Ala Asp  
                                  325                      330                      335  
 Lys Thr Val Ala Leu Trp Asp Leu Arg Asn Leu Lys Leu Lys Leu His  
                                  340                      345                      350  
 Ser Phe Glu Ser His Lys Asp Glu Ile Phe Gln Val Gln Trp Ser Pro  
                                  355                      360                      365  
 His Asn Glu Thr Ile Leu Ala Ser Ser Gly Thr Asp Arg Arg Leu Asn  
                                  370                      375                      380  
 Val Trp Asp Leu Ser Lys Ile Gly Glu Glu Gln Ser Pro Glu Asp Ala  
 385                                   390                      395                      400  
 Glu Asp Gly Pro Pro Glu Leu Leu Phe Ile His Gly Gly His Thr Ala  
                                  405                      410                      415  
 Lys Ile Ser Asp Phe Ser Trp Asn Pro Asn Glu Pro Trp Val Ile Cys  
                                  420                      425                      430  
 Ser Val Ser Glu Asp Asn Ile Met Gln Val Trp Gln Met Ala Glu Asn  
                                  435                      440                      445  
 Ile Tyr Asn Asp Glu Asp Pro Glu Gly Ser Val Asp Pro Glu Gly Gln  
                                  450                      455                      460  
 Gly Ser  
 465

&lt;210&gt; 998

&lt;211&gt; 165

965

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 998

Thr Arg Pro Pro Thr Arg Arg Pro Thr Arg Pro Pro Lys Ala Lys Lys  
 1 5 10 15

Glu Ala Pro Ala Pro Pro Lys Ala Glu Ala Lys Ala Lys Ala Leu Lys  
 20 25 30

Ala Lys Lys Ala Val Leu Lys Gly Val His Ser His Lys Lys Lys Lys  
 35 40 45

Ile Arg Thr Ser Pro Thr Phe Arg Arg Pro Lys Thr Leu Arg Leu Arg  
 50 55 60

Arg Gln Pro Lys Tyr Pro Arg Lys Ser Ala Pro Arg Arg Asn Lys Leu  
 65 70 75 80

Asp His Tyr Ala Ile Ile Lys Phe Pro Leu Thr Thr Glu Ser Ala Met  
 85 90 95

Lys Lys Ile Glu Asp Asn Asn Thr Leu Val Phe Ile Val Asp Val Lys  
 100 105 110

Ala Asn Lys His Gln Ile Lys Gln Ala Val Lys Lys Leu Tyr Asp Ile  
 115 120 125

Asp Val Ala Lys Val Asn Thr Leu Ile Arg Pro Asp Gly Glu Lys Lys  
 130 135 140

Ala Tyr Val Arg Leu Ala Pro Asp Tyr Asp Ala Leu Asp Val Ala Asn  
 145 150 155 160

Lys Ile Gly Ile Ile  
 165

&lt;210&gt; 999

&lt;211&gt; 194

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 999

Pro Glu Asn Ser Thr Ser Ser Phe Leu Leu Trp Gly Cys Pro Pro Ser  
 1 5 10 15

Val Val Cys Phe Thr Val Gly Ser Pro Ala Arg Arg Pro Gln Cys Phe  
 20 25 30

966

Leu	Arg	Ala	Glu	Met	Ala	Asn	Ser	Gly	Leu	Gln	Leu	Leu	Gly	Phe	Ser	
35				40				45								
Met	Ala	Leu	Leu	Gly	Trp	Val	Gly	Leu	Val	Ala	Cys	Thr	Ala	Ile	Pro	
50				55				60								
Gln	Trp	Gln	Met	Ser	Ser	Tyr	Ala	Gly	Asp	Asn	Ile	Ile	Thr	Ala	Gln	
65				70				75				80				
Ala	Met	Tyr	Lys	Gly	Leu	Trp	Met	Asp	Cys	Val	Thr	Gln	Ser	Thr	Gly	
				85				90				95				
Met	Met	Ser	Cys	Lys	Met	Tyr	Asp	Ser	Val	Leu	Ala	Leu	Ser	Ala	Ala	
100				105				110								
Leu	Gln	Ala	Thr	Arg	Ala	Leu	Met	Val	Val	Ser	Leu	Val	Leu	Gly	Phe	
115				120				125								
Leu	Ala	Met	Phe	Val	Ala	Thr	Met	Gly	Met	Lys	Cys	Thr	Arg	Cys	Gly	
130				135				140								
Gly	Asp	Asp	Lys	Val	Lys	Lys	Ala	Arg	Ile	Ala	Met	Gly	Gly	Gly	Ile	
145				150				155				160				
Ile	Phe	Ile	Val	Ala	Gly	Leu	Ala	Ala	Leu	Val	Ala	Cys	Ser	Trp	Tyr	
				165				170				175				
Gly	His	Gln	Ile	Val	Thr	Asp	Phe	Tyr	Asn	Pro	Leu	Ile	Pro	Thr	Asn	
180				185				190								
Ile Lys																

<210> 1000

**<211> 362**

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (25)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1000

Arg Gln Gln Arg Thr Arg Lys Lys Lys Pro Ala Gly Ala Ala Leu Gly  
1 5 10 15

Ala Leu Gly Pro Arg Ala Gln Leu Xaa Ala Ala Ala Gln Thr Asn Ser  
20 25 30

Asn Ala Ala Gly Lys Gln Leu Arg Lys Glu Ser Gln Lys Asp Arg Lys  
 35 40 45  
 Asn Pro Leu Pro Pro Ser Val Gly Val Val Asp Lys Lys Glu Glu Thr  
 50 55 60  
 Gln Pro Pro Val Ala Leu Lys Lys Glu Gly Ile Arg Arg Val Gly Arg  
 65 70 75 80  
 Arg Pro Asp Gln Gln Leu Gln Gly Glu Gly Lys Ile Ile Asp Arg Arg  
 85 90 95  
 Pro Glu Arg Arg Pro Pro Arg Glu Arg Arg Phe Glu Lys Pro Leu Glu  
 100 105 110  
 Glu Lys Gly Glu Gly Gly Glu Phe Ser Val Asp Arg Pro Ile Ile Asp  
 115 120 125  
 Arg Pro Ile Arg Gly Arg Gly Gly Leu Gly Arg Gly Arg Gly Gly Arg  
 130 135 140  
 Gly Arg Gly Met Gly Arg Gly Asp Gly Phe Asp Ser Arg Gly Lys Arg  
 145 150 155 160  
 Glu Phe Asp Arg His Ser Gly Ser Asp Arg Ser Ser Phe Ser His Tyr  
 165 170 175  
 Ser Gly Leu Lys His Glu Asp Lys Arg Gly Gly Ser Gly Ser His Asn  
 180 185 190  
 Trp Gly Thr Val Lys Asp Glu Leu Thr Asp Leu Asp Gln Ser Asn Val  
 195 200 205  
 Thr Glu Glu Thr Pro Glu Gly Glu Glu His His Pro Val Ala Asp Thr  
 210 215 220  
 Glu Asn Lys Glu Asn Glu Val Glu Glu Val Lys Glu Glu Gly Pro Lys  
 225 230 235 240  
 Glu Met Thr Leu Asp Glu Trp Lys Ala Ile Gln Asn Lys Asp Arg Ala  
 245 250 255  
 Lys Val Glu Phe Asn Ile Arg Lys Pro Asn Glu Gly Ala Asp Gly Gln  
 260 265 270  
 Trp Lys Lys Gly Phe Val Leu His Lys Ser Lys Ser Glu Glu Ala His  
 275 280 285  
 Ala Glu Asp Ser Val Met Asp His His Phe Arg Lys Pro Ala Asn Asp  
 290 295 300

968

Ile Thr Ser Gln Leu Glu Ile Asn Phe Gly Asp Leu Gly Arg Pro Gly  
 305 310 315 320

Arg Gly Gly Arg Gly Gly Arg Gly Gly Arg Gly Arg Gly Gly Arg Pro  
 325 330 335

Asn Arg Gly Ser Arg Thr Asp Lys Ser Ser Ala Ser Ala Pro Asp Val  
 340 345 350

Asp Asp Pro Glu Ala Phe Pro Ala Leu Ala  
 355 360

&lt;210&gt; 1001

&lt;211&gt; 207

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1001

Leu Met Ser Val Val Arg Gly Phe Ser Glu Ala Ala Ala Gln Tyr Asn  
 1 5 10 15

Pro Glu Pro Pro Pro Pro Arg Thr His Tyr Ser Asn Ile Glu Ala Asn  
 20 25 30

Glu Ser Glu Glu Val Arg Gln Phe Arg Arg Leu Phe Ala Gln Leu Ala  
 35 40 45

Gly Asp Asp Met Glu Val Ser Ala Thr Glu Leu Met Asn Ile Leu Asn  
 50 55 60

Lys Val Val Thr Arg His Pro Asp Leu Lys Thr Asp Gly Phe Gly Ile  
 65 70 75 80

Asp Thr Cys Arg Ser Met Val Ala Val Met Asp Ser Asp Thr Thr Gly  
 85 90 95

Lys Leu Gly Phe Glu Glu Phe Lys Tyr Leu Trp Asn Asn Ile Lys Arg  
 100 105 110

Trp Gln Ala Ile Tyr Lys Gln Phe Asp Thr Asp Arg Ser Gly Thr Ile  
 115 120 125

Cys Ser Ser Glu Leu Pro Gly Ala Phe Glu Ala Ala Gly Phe His Leu  
 130 135 140

Asn Glu His Leu Tyr Asn Met Ile Ile Arg Arg Tyr Ser Asp Glu Ser  
 145 150 155 160

969

Gly Asn Met Asp Phe Asp Asn Phe Ile Ser Cys Leu Val Arg Leu Asp  
                                   165                                  170                                  175

Ala Met Phe Arg Ala Phe Lys Ser Leu Asp Lys Asp Gly Thr Gly Gln  
                                   180                                  185                                  190

Ile Gln Val Asn Ile Gln Glu Trp Leu Gln Leu Thr Met Tyr Ser  
                                   195                                  200                                  205

&lt;210&gt; 1002

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (12)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1002

Ile Phe Cys Asp Thr Arg Ser His Gln Val Ala Xaa Gly Trp Phe Arg  
   1                                  5                                  10                                  15

Ile Pro Gly Leu Lys  
                                   20

&lt;210&gt; 1003

&lt;211&gt; 109

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1003



970

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Met Pro Gln Leu Gly Leu Ser Cys Ile Pro Val Glu Gly Pro Xaa Pro
 1             5             10             15

Cys Leu Xaa Glu Val Arg Leu Cys Cys Val Asn Gly Gln Ala Leu Pro
      20             25             30

Gln Pro Thr Pro Gly Lys Val His Leu Phe Ser Gly Leu Tyr Lys Val
      35             40             45

Ser Trp Gly Pro Val Ala Ser Leu Pro Val Arg Ser Asp Phe Ser Leu
      50             55             60

Ser Ser Ser Pro Val Gly Glu Thr Lys Pro Asp Trp Gly Ala Gln Gly
      65             70             75             80

Glu His Gly Lys Gly Arg Leu Pro Cys Leu Ser Leu Ala Val Arg Val
      85             90             95

Arg Val Thr His Thr Lys Xaa Glu Cys Gly Gln Gln Val
      100             105

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&lt;210&gt; 1004

&lt;211&gt; 542

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (252)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (519)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1004

```

Lys Asp Pro Glu Glu Tyr Cys Cys Thr Pro Ala Ala Arg Gly Arg Gly
 1             5             10             15

Lys Ser Ala Ala Leu Gly Leu Ala Ile Ala Gly Ala Val Ala Phe Gly
      20             25             30

Tyr Ser Asn Ile Phe Val Thr Ser Pro Ser Pro Asp Asn Leu His Thr
      35             40             45

Leu Phe Glu Phe Val Phe Lys Gly Phe Asp Ala Leu Gln Tyr Gln Glu
      50             55             60

```

971

His Leu Asp Tyr Glu Ile Ile Gln Ser Leu Asn Pro Glu Phe Asn Lys  
 65 70 75 80

Ala Val Ile Arg Val Asn Val Phe Arg Glu His Arg Gln Thr Ile Gln  
 85 90 95

Tyr Ile His Pro Ala Asp Ala Val Lys Leu Gly Gln Ala Glu Leu Val  
 100 105 110

Val Ile Asp Glu Ala Ala Ala Ile Pro Leu Pro Leu Val Lys Ser Leu  
 115 120 125

Leu Gly Pro Tyr Leu Val Phe Met Ala Ser Thr Ile Asn Gly Tyr Glu  
 130 135 140

Gly Thr Gly Arg Ser Leu Ser Leu Lys Leu Ile Gln Gln Leu Arg Gln  
 145 150 155 160

Gln Ser Ala Gln Ser Gln Val Ser Thr Thr Ala Glu Asn Lys Thr Thr  
 165 170 175

Thr Thr Ala Arg Leu Ala Ser Ala Arg Thr Leu His Glu Val Ser Leu  
 180 185 190

Gln Glu Ser Ile Arg Tyr Ala Pro Gly Asp Ala Val Glu Lys Trp Leu  
 195 200 205

Asn Asp Leu Leu Cys Leu Asp Cys Leu Asn Ile Thr Arg Ile Val Ser  
 210 215 220

Gly Cys Pro Leu Pro Glu Ala Cys Glu Leu Tyr Tyr Val Asn Arg Asp  
 225 230 235 240

Thr Leu Phe Cys Tyr His Lys Ala Ser Glu Val Xaa Leu Gln Arg Leu  
 245 250 255

Met Ala Leu Tyr Val Ala Ser His Tyr Lys Asn Ser Pro Asn Asp Leu  
 260 265 270

Gln Met Leu Ser Asp Ala Pro Ala His His Leu Phe Cys Leu Leu Pro  
 275 280 285

Pro Val Pro Pro Thr Gln Asn Ala Leu Pro Glu Val Leu Ala Val Ile  
 290 295 300

Gln Val Cys Leu Glu Gly Glu Ile Ser Arg Gln Ser Ile Leu Asn Ser  
 305 310 315 320

Leu Ser Arg Gly Lys Lys Ala Ser Gly Asp Leu Ile Pro Trp Thr Val  
 325 330 335

972

```

Ser Glu Gln Phe Gln Asp Pro Asp Phe Gly Gly Leu Ser Gly Gly Arg
      340              345              350

Val Val Arg Ile Ala Val His Pro Asp Tyr Gln Gly Met Gly Tyr Gly
      355              360              365

Ser Arg Ala Leu Gln Leu Leu Gln Met Tyr Tyr Glu Gly Arg Phe Pro
      370              375              380

Cys Leu Glu Glu Lys Val Leu Glu Thr Pro Gln Glu Ile His Thr Val
      385              390              395              400

Ser Ser Glu Ala Val Ser Leu Leu Glu Glu Val Ile Thr Pro Arg Lys
      405              410              415

Asp Leu Pro Pro Leu Leu Leu Lys Leu Asn Glu Arg Pro Ala Glu Arg
      420              425              430

Leu Asp Tyr Leu Gly Val Ser Tyr Gly Leu Thr Pro Arg Leu Leu Lys
      435              440              445

Phe Trp Lys Arg Ala Gly Phe Val Pro Val Tyr Leu Arg Gln Thr Pro
      450              455              460

Asn Asp Leu Thr Gly Glu His Ser Cys Ile Met Leu Lys Thr Leu Thr
      465              470              475              480

Asp Glu Asp Glu Ala Asp Gln Gly Gly Trp Leu Ala Ala Phe Trp Lys
      485              490              495

Asp Phe Arg Arg Arg Phe Leu Ala Leu Leu Ser Tyr Gln Phe Ser Thr
      500              505              510

Phe Ser Pro Ser Leu Ala Xaa Asn Ile Ile Gln Asn Arg Asn Met Gly
      515              520              525

Lys Pro Ala Gln Pro Ala Leu Ser Arg Glu Glu Leu Glu Ala
      530              535              540

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&lt;210&gt; 1005

&lt;211&gt; 202

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (77)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

973

&lt;400&gt; 1005

Asp Ala Ala Asp Thr Ile Glu Thr Asp Thr Ala Thr Ala Asp Thr Thr  
 1 5 10 15

Val Ala Asn Asn Val Pro Pro Ala Ala Thr Ser Leu Ile Asp Leu Trp  
 20 25 30

Pro Gly Asn Gly Glu Gly Ala Ser Thr Leu Gln Gly Glu Pro Arg Ala  
 35 40 45

Pro Thr Pro Pro Ser Gly Thr Glu Val Thr Leu Ala Glu Val Pro Leu  
 50 55 60

Leu Asp Glu Val Ala Pro Glu Pro Leu Leu Pro Ala Xaa Glu Gly Cys  
 65 70 75 80

Ala Thr Leu Leu Asn Phe Asp Glu Leu Pro Glu Pro Pro Ala Thr Phe  
 85 90 95

Cys Asp Pro Glu Glu Val Glu Gly Glu Pro Leu Ala Ala Pro Gln Thr  
 100 105 110

Pro Thr Leu Pro Ser Ala Leu Glu Glu Leu Glu Gln Glu Gln Glu Pro  
 115 120 125

Glu Pro His Leu Leu Thr Asn Gly Glu Thr Thr Gln Lys Glu Gly Thr  
 130 135 140

Gln Ala Ser Glu Gly Tyr Phe Ser Gln Ser Gln Glu Glu Glu Phe Ala  
 145 150 155 160

Gln Ser Glu Glu Leu Cys Ala Lys Ala Pro Pro Pro Val Phe Tyr Asn  
 165 170 175

Lys Pro Pro Glu Ile Asp Ile Thr Cys Trp Asp Ala Asp Pro Val Pro  
 180 185 190

Glu Glu Glu Glu Gly Phe Glu Gly Gly Asp  
 195 200

&lt;210&gt; 1006

&lt;211&gt; 561

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1006

Ser Ala Met Arg Lys Phe Ala Tyr Cys Lys Val Val Leu Ala Thr Ser  
 1 5 10 15

974

Leu Ile Trp Val Leu Leu Asp Met Phe Leu Leu Leu Tyr Phe Ser Glu  
                   20                  25                  30

Cys Asn Lys Cys Asp Glu Lys Lys Glu Arg Gly Leu Pro Ala Gly Asp  
                   35                  40                  45

Val Leu Glu Pro Val Gln Lys Pro His Glu Gly Pro Gly Glu Met Gly  
                   50                  55                  60

Lys Pro Val Val Ile Pro Lys Glu Asp Gln Glu Lys Met Lys Glu Met  
                   65                  70                  75                  80

Phe Lys Ile Asn Gln Phe Asn Leu Met Ala Ser Glu Met Ile Ala Leu  
                                   85                  90                  95

Asn Arg Ser Leu Pro Asp Val Arg Leu Glu Gly Cys Lys Thr Lys Val  
                   100                  105                  110

Tyr Pro Asp Asn Leu Pro Thr Thr Ser Val Val Ile Val Phe His Asn  
                   115                  120                  125

Glu Ala Trp Ser Thr Leu Leu Arg Thr Val His Ser Val Ile Asn Arg  
                   130                  135                  140

Ser Pro Arg His Met Ile Glu Glu Ile Val Leu Val Asp Asp Ala Ser  
                   145                  150                  155                  160

Glu Arg Asp Phe Leu Lys Arg Pro Leu Glu Ser Tyr Val Lys Lys Leu  
                   165                  170                  175

Lys Val Pro Val His Val Ile Arg Met Glu Gln Arg Ser Gly Leu Ile  
                   180                  185                  190

Arg Ala Arg Leu Lys Gly Ala Ala Val Ser Lys Gly Gln Val Ile Thr  
                   195                  200                  205

Phe Leu Asp Ala His Cys Glu Cys Thr Val Gly Trp Leu Glu Pro Leu  
                   210                  215                  220

Leu Ala Arg Ile Lys His Asp Arg Arg Thr Val Val Cys Pro Ile Ile  
                   225                  230                  235                  240

Asp Val Ile Ser Asp Asp Thr Phe Glu Tyr Met Ala Gly Ser Asp Met  
                   245                  250                  255

Thr Tyr Gly Gly Phe Asn Trp Lys Leu Asn Phe Arg Trp Tyr Pro Val  
                   260                  265                  270

Pro Gln Arg Glu Met Asp Arg Arg Lys Gly Asp Arg Thr Leu Pro Val  
                   275                  280                  285

975

Arg Thr Pro Thr Met Ala Gly Gly Leu Phe Ser Ile Asp Arg Asp Tyr  
 290 295 300  
 Phe Gln Glu Ile Gly Thr Tyr Asp Ala Gly Met Asp Ile Trp Gly Gly  
 305 310 315 320  
 Glu Asn Leu Glu Ile Ser Phe Arg Ile Trp Gln Cys Gly Gly Thr Leu  
 325 330 335  
 Glu Ile Val Thr Cys Ser His Val Gly His Val Phe Arg Lys Ala Thr  
 340 345 350  
 Pro Tyr Thr Phe Pro Gly Gly Thr Gly Gln Ile Ile Asn Lys Asn Asn  
 355 360 365  
 Arg Arg Leu Ala Glu Val Trp Met Asp Glu Phe Lys Asn Phe Phe Tyr  
 370 375 380  
 Ile Ile Ser Pro Gly Val Thr Lys Val Asp Tyr Gly Asp Ile Ser Ser  
 385 390 395 400  
 Arg Val Gly Leu Arg His Lys Leu Gln Cys Lys Pro Phe Ser Trp Tyr  
 405 410 415  
 Leu Glu Asn Ile Tyr Pro Asp Ser Gln Ile Pro Arg His Tyr Phe Ser  
 420 425 430  
 Leu Gly Glu Ile Arg Asn Val Glu Thr Asn Gln Cys Leu Asp Asn Met  
 435 440 445  
 Ala Arg Lys Glu Asn Glu Lys Val Gly Ile Phe Asn Cys His Gly Met  
 450 455 460  
 Gly Gly Asn Gln Val Phe Ser Tyr Thr Ala Asn Lys Glu Ile Arg Thr  
 465 470 475 480  
 Asp Asp Leu Cys Leu Asp Val Ser Lys Leu Asn Gly Pro Val Thr Met  
 485 490 495  
 Leu Lys Cys His His Leu Lys Gly Asn Gln Leu Trp Glu Tyr Asp Pro  
 500 505 510  
 Val Lys Leu Thr Leu Gln His Val Asn Ser Asn Gln Cys Leu Asp Lys  
 515 520 525  
 Ala Thr Glu Glu Asp Ser Gln Val Pro Ser Ile Arg Asp Cys Asn Gly  
 530 535 540  
 Ser Arg Ser Gln Gln Trp Leu Leu Arg Asn Val Thr Leu Pro Glu Ile  
 545 550 555 560

976

Phe

&lt;210&gt; 1007

&lt;211&gt; 189

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1007

Phe Ile Pro Ile Gly Glu Asn Ser Ala Thr Gly Glu Asn Arg Leu Ala  
 1 5 10 15

Ser Ala Leu Trp Ile Gly Asp Arg Ser Tyr Pro Gly Leu Ser Glu Gly  
 20 25 30

Asn Ser Arg Pro Pro Ile Pro Gly Pro Pro Tyr Val Ala Ser Pro Asp  
 35 40 45

Leu Trp Ser His Trp Glu Asp Ser Ala Leu Pro Pro Pro Ser Leu Arg  
 50 55 60

Pro Val Gln Pro Thr Trp Glu Gly Ser Ser Glu Ala Gly Leu Asp Trp  
 65 70 75 80

Ala Gly Ala Ser Phe Ser Pro Gly Thr Pro Met Trp Ala Ala Leu Asp  
 85 90 95

Glu Gln Met Leu Gln Glu Gly Ile Gln Ala Ser Leu Leu Asp Gly Pro  
 100 105 110

Ala Gln Glu Pro Gln Ser Ala Pro Trp Leu Ser Lys Ser Ser Val Ser  
 115 120 125

Ser Leu Arg Leu Gln Gln Leu Glu Arg Met Gly Phe Pro Thr Glu Gln  
 130 135 140

Ala Val Val Ala Leu Ala Ala Thr Gly Arg Val Glu Gly Ala Val Ser  
 145 150 155 160

Leu Leu Val Gly Gly Gln Val Gly Thr Glu Thr Leu Val Thr His Gly  
 165 170 175

Lys Gly Gly Pro Ala His Ser Glu Gly Pro Gly Pro Pro  
 180 185

&lt;210&gt; 1008

&lt;211&gt; 300

977

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (39)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1008

Arg	Gln	Lys	Ser	Ser	Xaa	Leu	Trp	Pro	His	Pro	Leu	Xaa	Arg	His	Arg
1				5					10					15	

Ala	Gly	Pro	Gly	Leu	Ala	Gly	Asn	Gly	Gly	Ile	Leu	Pro	Asn	Leu	Gly
			20					25					30		

Asp	Gly	Gly	Gly	Gly	Trp	Xaa	Trp	Trp	Glu	Gly	Asn	His	Val	Leu	Leu
			35				40					45			

Asn	Leu	Phe	Leu	Val	Pro	Pro	Ile	Pro	Arg	Pro	Thr	Arg	His	His	Thr
	50					55					60				

Ala	Asp	Asn	Thr	His	Pro	Leu	Ala	Gln	Ala	Ser	Ile	His	Met	Cys	Cys
65					70					75				80	

Thr	Phe	Ser	Ser	Arg	His	Ala	Asp	Asn	Pro	Thr	Arg	Pro	His	His	His
				85					90					95	

Met	Pro	Lys	Cys	Thr	His	Thr	Glu	Pro	His	Arg	Pro	Ser	Gly	Pro	Ala
			100					105					110		

Gly	Ser	Ser	Leu	Gly	Phe	Pro	Leu	Ala	His	Phe	Gln	Gly	Pro	Gly	Ala
			115				120					125			

Ala	Thr	Lys	Cys	Glu	Ser	Ser	Val	Ala	Ala	Pro	Ser	Phe	Ser	Pro	Ser
	130						135				140				

Thr	Ser	Ile	Gly	Pro	Ile	Gly	Lys	His	Arg	Gly	Leu	Thr	Leu	Phe	His
145					150					155				160	

Ile	Pro	Cys	Pro	Ala	Leu	Lys	Trp	Thr	Ile	Thr	Phe	Trp	Asp	Arg	Leu
				165				170						175	



978

Lys Phe Leu Lys Ser Leu His His Ser Val Pro Ser Lys Gly Ser Pro  
                   180                                  185                                  190  
 Cys Gln Trp Gly Phe Glu Arg Glu Phe Leu Glu Pro Thr Phe Lys Phe  
                   195                                  200                                  205  
 Cys Leu Ile Trp Arg Glu Thr Lys Ile Gly Arg Gly Lys Arg Thr Pro  
                   210                                  215                                  220  
 Asp Val Leu Leu Leu Pro Glu Ile Leu Glu Thr Asp Ser Leu Asp Trp  
                   225                                  230                                  235                                  240  
 Lys Met Asp Lys Ser Ala Leu Thr Trp Arg Val Gly Thr Arg Trp Gly  
                                   245                                  250                                  255  
 Pro Ala Leu Pro Thr Ala Ala Val Ala Ser Ser Leu Ala Gly Phe Ala  
                   260                                  265                                  270  
 Gly Arg Gln Gln Glu Gly Glu Gly Gly Ser Thr Ala Arg Gly Thr Gly  
                   275                                  280                                  285  
 Gly Ala Ala Gly Leu Gln Glu Leu Phe Phe His Cys  
                   290                                  295                                  300

&lt;210&gt; 1009

&lt;211&gt; 344

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (38)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1009

Arg Pro Pro Cys Pro His Ser Arg Ser Xaa Trp Arg Ile Leu Ser Leu  
   1                                  5                                  10                                  15

Thr Pro Asn Pro Asp Pro Leu Pro Asn Met Ser Val Phe Phe Phe Ile  
                   20                                  25                                  30

Phe Leu Asn Ile Phe Xaa Leu Ala Phe Ser Ser Pro Gly Ser Gln Pro  
                   35                                  40                                  45

979

Leu Leu Asn Ser Pro Pro Ser Phe Val Cys Trp Ser Arg Gly Phe Met  
 50 55 60

Glu Met Asn Gly Arg Gly Glu Leu Val Glu Ser Leu Lys Arg Phe Cys  
 65 70 75 80

Ala Ser Thr Arg Leu Pro Pro Thr Pro Leu Leu Leu Phe Pro Glu Glu  
 85 90 95

Glu Ala Thr Asn Gly Arg Glu Gly Leu Leu Arg Phe Ser Ser Trp Pro  
 100 105 110

Phe Ser Ile Gln Asp Val Val Gln Pro Leu Thr Leu Gln Val Gln Arg  
 115 120 125

Pro Leu Val Ser Val Thr Val Ser Asp Ala Ser Trp Val Ser Glu Leu  
 130 135 140

Leu Trp Ser Leu Phe Val Pro Phe Thr Val Tyr Gln Val Arg Trp Leu  
 145 150 155 160

Arg Pro Val His Arg Gln Leu Gly Glu Ala Asn Glu Glu Phe Ala Leu  
 165 170 175

Arg Val Gln Gln Leu Val Ala Lys Glu Leu Gly Gln Thr Gly Thr Arg  
 180 185 190

Leu Thr Pro Ala Asp Lys Ala Glu His Met Lys Arg Gln Arg His Pro  
 195 200 205

Arg Leu Arg Pro Gln Ser Ala Gln Ser Ser Phe Pro Pro Ser Pro Gly  
 210 215 220

Pro Ser Pro Asp Val Gln Leu Ala Thr Leu Ala Gln Arg Val Lys Glu  
 225 230 235 240

Val Leu Pro His Val Pro Leu Gly Val Ile Gln Arg Asp Leu Ala Lys  
 245 250 255

Thr Gly Cys Val Asp Leu Thr Ile Thr Asn Leu Leu Glu Gly Ala Val  
 260 265 270

Ala Phe Met Pro Glu Asp Ile Thr Lys Gly Thr Gln Ser Leu Pro Thr  
 275 280 285

Ala Ser Ala Ser Lys Phe Pro Ser Ser Gly Pro Val Thr Pro Gln Pro  
 290 295 300

Thr Ala Leu Thr Phe Ala Lys Ser Ser Trp Ala Arg Gln Glu Ser Leu  
 305 310 315 320

980

Gln Glu Arg Lys Gln Ala Leu Tyr Glu Tyr Ala Arg Arg Arg Phe Thr  
                   325                                  330                                  335

Glu Arg Arg Ala Gln Glu Ala Asp  
                   340

<210> 1010

<211> 233

<212> PRT

<213> Homo sapiens

<400> 1010

Pro His Cys Glu Pro Asn Pro Gly Ala Gly Ala Met Val Leu Leu His  
   1                  5                                  10                                  15

Val Leu Phe Glu His Ala Val Gly Tyr Ala Leu Leu Ala Leu Lys Glu  
                   20                                  25                                  30

Val Glu Glu Ile Ser Leu Leu Gln Pro Gln Val Glu Glu Ser Val Leu  
                   35                                  40                                  45

Asn Leu Gly Lys Phe His Ser Ile Val Arg Leu Val Ala Phe Cys Pro  
                   50                                  55                                  60

Phe Ala Ser Ser Gln Val Ala Leu Glu Asn Ala Asn Ala Val Ser Glu  
   65                                  70                                  75                                  80

Gly Val Val His Glu Asp Leu Arg Leu Leu Leu Glu Thr His Leu Pro  
                                   85                                  90                                  95

Ser Lys Lys Lys Lys Val Leu Leu Gly Val Gly Asp Pro Lys Ile Gly  
                   100                                  105                                  110

Ala Ala Ile Gln Glu Glu Leu Gly Tyr Asn Cys Gln Thr Gly Gly Val  
                   115                                  120                                  125

Ile Ala Glu Ile Leu Arg Gly Val Arg Leu His Phe His Asn Leu Val  
                   130                                  135                                  140

Lys Gly Leu Thr Asp Leu Ser Ala Cys Lys Ala Gln Leu Gly Leu Gly  
   145                                  150                                  155                                  160

His Ser Tyr Ser Arg Ala Lys Val Lys Phe Asn Val Asn Arg Val Asp  
                                   165                                  170                                  175

Asn Met Ile Ile Gln Ser Ile Ser Leu Leu Asp Gln Leu Asp Lys Asp  
                   180                                  185                                  190

981

Ile Asn Thr Phe Ser Met Arg Val Arg Glu Trp Tyr Gly Tyr His Phe  
 195 200 205

Pro Glu Leu Val Lys Ile Ile Asn Asp Asn Ala Thr Tyr Cys Arg Leu  
 210 215 220

Ala Gln Phe Ile Gly Asn Arg Arg Asn  
 225 230

&lt;210&gt; 1011

&lt;211&gt; 187

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1011

Gly Thr Ser Xaa Phe Ser Phe Pro Leu Gly Arg Glu Glu Ala Met Ala  
 1 5 10 15

Ala Met Ala Ser Leu Gly Ala Leu Ala Leu Leu Leu Ser Ser Leu  
 20 25 30

Ser Arg Cys Ser Ala Glu Ala Cys Leu Glu Pro Gln Ile Thr Pro Ser  
 35 40 45

Tyr Tyr Thr Thr Ser Asp Ala Val Ile Ser Thr Glu Thr Val Phe Ile  
 50 55 60

Val Glu Ile Ser Leu Thr Cys Lys Asn Arg Val Gln Asn Met Ala Leu  
 65 70 75 80

Tyr Ala Asp Val Gly Gly Lys Gln Phe Pro Val Thr Arg Gly Gln Asp  
 85 90 95

Val Gly Arg Tyr Gln Val Ser Trp Ser Leu Asp His Lys Ser Ala His  
 100 105 110

Ala Gly Thr Tyr Glu Val Arg Phe Phe Asp Glu Glu Ser Tyr Ser Leu  
 115 120 125

Leu Arg Lys Ala Gln Arg Asn Asn Glu Asp Ile Ser Ile Ile Pro Pro  
 130 135 140

Leu Phe Thr Val Ser Val Asp His Arg Gly Thr Trp Asn Gly Pro Trp  
 145 150 155 160

982

Val Ser Thr Glu Val Leu Ala Ala Ala Ile Gly Leu Val Ile Tyr Tyr  
                   165                                  170                                  175

Leu Ala Phe Ser Ala Lys Ser His Ile Gln Ala  
                   180                                  185

<210> 1012

<211> 708

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (18)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (153)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (229)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (433)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1012

Ala Leu Arg Pro Ile Ser Ser Val Arg Ala Gly Asp Arg Cys Gln Arg  
   1                                  5                                  10                                  15

Ser Xaa Ala Ala Asp Met Ala Ala Ser Thr Ala Ala Gly Lys Gln Arg  
                   20                                  25                                  30

Ile Pro Lys Val Ala Lys Val Lys Asn Lys Ala Pro Ala Glu Val Gln  
                   35                                  40                                  45

Ile Thr Ala Glu Gln Leu Leu Arg Glu Ala Lys Glu Arg Glu Leu Glu  
                   50                                  55                                  60

Leu Leu Pro Pro Pro Pro Gln Gln Lys Ile Thr Asp Glu Glu Glu Leu  
                   65                                  70                                  75                                  80

Asn Asp Tyr Lys Leu Arg Lys Arg Lys Thr Phe Glu Asp Asn Ile Arg

983

85								90				95				
Lys	Asn	Arg	Thr	Val	Ile	Ser	Asn	Trp	Ile	Lys	Tyr	Ala	Gln	Trp	Glu	
100				105				110								
Glu	Ser	Leu	Lys	Glu	Ile	Gln	Arg	Ala	Arg	Ser	Ile	Tyr	Glu	Arg	Ala	
115				120				125								
Leu	Asp	Val	Asp	Tyr	Arg	Asn	Ile	Thr	Leu	Trp	Leu	Lys	Tyr	Ala	Glu	
130				135				140								
Met	Glu	Met	Lys	Asn	Arg	Gln	Val	Xaa	His	Ala	Arg	Asn	Ile	Trp	Asp	
145				150				155				160				
Arg	Ala	Ile	Thr	Thr	Leu	Pro	Arg	Val	Asn	Gln	Phe	Trp	Tyr	Lys	Tyr	
165				170				175								
Thr	Tyr	Met	Glu	Glu	Met	Leu	Gly	Asn	Val	Ala	Gly	Ala	Arg	Gln	Val	
180				185				190								
Phe	Glu	Arg	Trp	Met	Glu	Trp	Gln	Pro	Glu	Glu	Gln	Ala	Trp	His	Ser	
195				200				205								
Tyr	Ile	Asn	Phe	Glu	Leu	Arg	Tyr	Lys	Glu	Val	Asp	Arg	Ala	Arg	Thr	
210				215				220								
Ile	Tyr	Glu	Arg	Xaa	Val	Leu	Val	His	Pro	Asp	Val	Lys	Asn	Trp	Ile	
225				230				235				240				
Lys	Tyr	Ala	Arg	Phe	Glu	Glu	Lys	His	Ala	Tyr	Phe	Ala	His	Ala	Arg	
245				250				255								
Lys	Val	Tyr	Glu	Arg	Ala	Val	Glu	Phe	Phe	Gly	Asp	Glu	His	Met	Asp	
260				265				270								
Glu	His	Leu	Tyr	Val	Ala	Phe	Ala	Lys	Phe	Glu	Glu	Asn	Gln	Lys	Glu	
275				280				285								
Phe	Glu	Arg	Val	Arg	Val	Ile	Tyr	Lys	Tyr	Ala	Leu	Asp	Arg	Ile	Ser	
290				295				300								
Lys	Gln	Asp	Ala	Gln	Glu	Leu	Phe	Lys	Asn	Tyr	Thr	Ile	Phe	Glu	Lys	
305				310				315				320				
Lys	Phe	Gly	Asp	Arg	Arg	Gly	Ile	Glu	Asp	Ile	Ile	Val	Ser	Lys	Arg	
325				330				335								
Arg	Phe	Gln	Tyr	Glu	Glu	Glu	Val	Lys	Ala	Asn	Pro	His	Asn	Tyr	Asp	
340				345				350								
Ala	Trp	Phe	Asp	Tyr	Leu	Arg	Leu	Val	Glu	Ser	Asp	Ala	Glu	Ala	Glu	

984

355	360	365
Ala Val Arg Glu Val Tyr Glu Arg Ala Ile Ala Asn Val Pro Pro Ile		
370	375	380
Gln Glu Lys Arg His Trp Lys Arg Tyr Ile Tyr Leu Trp Ile Asn Tyr		
385	390	395 400
Ala Leu Tyr Glu Glu Leu Glu Ala Lys Asp Pro Glu Arg Thr Arg Gln		
405	410	415
Val Tyr Gln Ala Ser Leu Glu Leu Ile Pro His Lys Lys Phe Thr Phe		
420	425	430
Xaa Lys Met Trp Ile Leu Tyr Ala Gln Phe Glu Ile Arg Gln Lys Asn		
435	440	445
Leu Ser Leu Ala Arg Arg Ala Leu Gly Thr Ser Ile Gly Lys Cys Pro		
450	455	460
Lys Asn Lys Leu Phe Lys Val Tyr Ile Glu Leu Glu Leu Gln Leu Arg		
465	470	475 480
Glu Phe Asp Arg Cys Arg Lys Leu Tyr Glu Lys Phe Leu Glu Phe Gly		
485	490	495
Pro Glu Asn Cys Thr Ser Trp Ile Lys Phe Ala Glu Leu Glu Thr Ile		
500	505	510
Leu Gly Asp Ile Asp Arg Ala Arg Ala Ile Tyr Glu Leu Ala Ile Ser		
515	520	525
Gln Pro Arg Leu Asp Met Pro Glu Val Leu Trp Lys Ser Tyr Ile Asp		
530	535	540
Phe Glu Ile Glu Gln Glu Glu Thr Glu Arg Thr Arg Asn Leu Tyr Arg		
545	550	555 560
Arg Leu Leu Gln Arg Thr Gln His Val Lys Val Trp Ile Ser Phe Ala		
565	570	575
Gln Phe Glu Leu Ser Ser Gly Lys Glu Gly Ser Leu Thr Lys Cys Arg		
580	585	590
Gln Ile Tyr Glu Glu Ala Asn Lys Thr Met Arg Asn Cys Glu Glu Lys		
595	600	605
Glu Glu Arg Leu Met Leu Leu Glu Ser Trp Arg Ser Phe Glu Glu Glu		
610	615	620
Phe Gly Thr Ala Ser Asp Lys Glu Arg Val Asp Lys Leu Met Pro Glu		

985

625                      630                      635                      640  
 Lys Val Lys Lys Arg Arg Lys Val Gln Thr Asp Asp Gly Ser Asp Ala  
                                 645                      650                      655  
 Gly Trp Glu Glu Tyr Phe Asp Tyr Ile Phe Pro Glu Asp Ala Ala Asn  
                                 660                      665                      670  
 Gln Pro Asn Leu Lys Leu Leu Ala Met Ala Lys Leu Trp Lys Lys Gln  
                                 675                      680                      685  
 Gln Gln Glu Lys Glu Asp Ala Glu His His Pro Asp Glu Asp Val Asp  
                                 690                      695                      700  
 Glu Ser Glu Ser  
 705

<210> 1013  
 <211> 183  
 <212> PRT  
 <213> Homo sapiens

<400> 1013  
 Leu Pro Pro Gln Val Ala Asp Thr Met Leu Pro Pro Met Ala Leu Pro  
   1                                5                                10                                15  
 Ser Val Ser Trp Met Leu Leu Ser Cys Leu Met Leu Leu Ser Gln Val  
                                 20                                25                                30  
 Gln Gly Glu Glu Pro Gln Arg Glu Leu Pro Ser Ala Arg Ile Arg Cys  
                                 35                                40                                45  
 Pro Lys Gly Ser Lys Ala Tyr Gly Ser His Cys Tyr Ala Leu Phe Leu  
                                 50                                55                                60  
 Ser Pro Lys Ser Trp Thr Asp Ala Asp Leu Ala Cys Gln Lys Arg Pro  
   65                                70                                75                                80  
 Ser Gly Asn Leu Val Ser Val Leu Ser Gly Ala Glu Gly Ser Phe Val  
                                 85                                90                                95  
 Ser Ser Leu Val Lys Ser Ile Gly Asn Ser Tyr Ser Tyr Val Trp Ile  
                                 100                                105                                110  
 Gly Leu His Asp Pro Thr Gln Gly Thr Glu Pro Asn Gly Glu Gly Trp  
                                 115                                120                                125  
 Glu Trp Ser Ser Ser Asp Val Met Asn Tyr Phe Ala Trp Glu Arg Asn  
   130                                135                                140



986

Pro Ser Thr Ile Ser Ser Pro Gly His Cys Ala Ser Leu Ser Arg Ser  
145 150 155 160

Thr Ala Phe Leu Arg Trp Lys Asp Tyr Asn Cys Asn Val Arg Leu Pro  
165 170 175

Tyr Val Cys Lys Phe Thr Asp  
180

<210> 1014

<211> 213

<212> PRT

<213> Homo sapiens

<400> 1014

Val Thr Asp Gly Gly Ser Ala Arg Lys Pro Lys Met Ala Val Pro Ala  
1 5 10 15

Ala Leu Ile Leu Arg Glu Ser Pro Ser Met Lys Lys Ala Val Ser Leu  
20 25 30

Ile Asn Ala Ile Asp Thr Gly Arg Phe Pro Arg Leu Leu Thr Arg Ile  
35 40 45

Leu Gln Lys Leu His Leu Lys Ala Glu Ser Ser Phe Ser Glu Glu Glu  
50 55 60

Glu Glu Lys Leu Gln Ala Ala Phe Ser Leu Glu Lys Gln Asp Leu His  
65 70 75 80

Leu Val Leu Glu Thr Ile Ser Phe Ile Leu Glu Gln Ala Val Tyr His  
85 90 95

Asn Val Lys Pro Ala Ala Leu Gln Gln Gln Leu Glu Asn Ile His Leu  
100 105 110

Arg Gln Asp Lys Ala Glu Ala Phe Val Asn Thr Trp Ser Ser Met Gly  
115 120 125

Gln Glu Thr Val Glu Lys Phe Arg Gln Arg Ile Leu Ala Pro Cys Lys  
130 135 140

Leu Glu Thr Val Gly Trp Gln Leu Asn Leu Gln Met Ala His Ser Ala  
145 150 155 160

Gln Ala Lys Leu Lys Ser Pro Gln Ala Val Leu Gln Leu Gly Val Asn  
165 170 175

987

Asn Glu Asp Ser Lys Ser Leu Glu Lys Val Leu Val Glu Phe Ser His  
 180 185 190

Lys Glu Leu Phe Asp Phe Tyr Asn Lys Leu Glu Thr Ile Gln Ala Gln  
 195 200 205

Leu Asp Ser Leu Thr  
 210

<210> 1015

<211> 544

<212> PRT

<213> Homo sapiens

<400> 1015

Ala Pro Gly Thr Met Asn Gly Glu Ala Ile Cys Ser Ala Leu Pro Thr  
 1 5 10 15

Ile Pro Tyr His Lys Leu Ala Asp Leu Arg Tyr Leu Ser Arg Gly Ala  
 20 25 30

Ser Gly Thr Val Ser Ser Ala Arg His Ala Asp Trp Arg Val Gln Val  
 35 40 45

Ala Val Lys His Leu His Ile His Thr Pro Leu Leu Asp Ser Glu Arg  
 50 55 60

Lys Asp Val Leu Arg Glu Ala Glu Ile Leu His Lys Ala Arg Phe Ser  
 65 70 75 80

Tyr Ile Leu Pro Ile Leu Gly Ile Cys Asn Glu Pro Glu Phe Leu Gly  
 85 90 95

Ile Val Thr Glu Tyr Met Pro Asn Gly Ser Leu Asn Glu Leu Leu His  
 100 105 110

Arg Lys Thr Glu Tyr Pro Asp Val Ala Trp Pro Leu Arg Phe Arg Ile  
 115 120 125

Leu His Glu Ile Ala Leu Gly Val Asn Tyr Leu His Asn Met Thr Pro  
 130 135 140

Pro Leu Leu His His Asp Leu Lys Thr Gln Asn Ile Leu Leu Asp Asn  
 145 150 155 160

Glu Phe His Val Lys Ile Ala Asp Phe Gly Leu Ser Lys Trp Arg Met  
 165 170 175

Met Ser Leu Ser Gln Ser Arg Ser Ser Lys Ser Ala Pro Glu Gly Gly

988

180	185	190
Thr Ile Ile Tyr Met Pro Pro Glu Asn Tyr Glu Pro Gly Gln Lys Ser		
195	200	205
Arg Ala Ser Ile Lys His Asp Ile Tyr Ser Tyr Ala Val Ile Thr Trp		
210	215	220
Glu Val Leu Ser Arg Lys Gln Pro Phe Glu Asp Val Thr Asn Pro Leu		
225	230	235
Gln Ile Met Tyr Ser Val Ser Gln Gly His Arg Pro Val Ile Asn Glu		
245	250	255
Glu Ser Leu Pro Tyr Asp Ile Pro His Arg Ala Arg Met Ile Ser Leu		
260	265	270
Ile Glu Ser Gly Trp Ala Gln Asn Pro Asp Glu Arg Pro Ser Phe Leu		
275	280	285
Lys Cys Leu Ile Glu Leu Glu Pro Val Leu Arg Thr Phe Glu Glu Ile		
290	295	300
Thr Phe Leu Glu Ala Val Ile Gln Leu Lys Lys Thr Lys Leu Gln Ser		
305	310	315
Val Ser Ser Ala Ile His Leu Cys Asp Lys Lys Lys Met Glu Leu Ser		
325	330	335
Leu Asn Ile Pro Val Asn His Gly Pro Gln Glu Glu Ser Cys Gly Ser		
340	345	350
Ser Gln Leu His Glu Asn Ser Gly Ser Pro Glu Thr Ser Arg Ser Leu		
355	360	365
Pro Ala Pro Gln Asp Asn Asp Phe Leu Ser Arg Lys Ala Gln Asp Cys		
370	375	380
Tyr Phe Met Lys Leu His His Cys Pro Gly Asn His Ser Trp Asp Ser		
385	390	395
Thr Ile Ser Gly Ser Gln Arg Ala Ala Phe Cys Asp His Lys Thr Thr		
405	410	415
Pro Cys Ser Ser Ala Ile Ile Asn Pro Leu Ser Thr Ala Gly Asn Ser		
420	425	430
Glu Arg Leu Gln Pro Gly Ile Ala Gln Gln Trp Ile Gln Ser Lys Arg		
435	440	445
Glu Asp Ile Val Asn Gln Met Thr Glu Ala Cys Leu Asn Gln Ser Leu		

989

450	455	460
Asp Ala Leu Leu Ser Arg Asp Leu Ile Met Lys Glu Asp Tyr Glu Leu		
465	470	475 480
Val Ser Thr Lys Pro Thr Arg Thr Ser Lys Val Arg Gln Leu Leu Asp		
	485	490 495
Thr Thr Asp Ile Gln Gly Glu Glu Phe Ala Lys Val Ile Val Gln Lys		
	500	505 510
Leu Lys Asp Asn Lys Gln Met Gly Leu Gln Pro Tyr Pro Glu Ile Leu		
	515	520 525
Val Val Ser Arg Ser Pro Ser Leu Asn Leu Leu Gln Asn Lys Ser Met		
	530	535 540

&lt;210&gt; 1016

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1016

His Pro Ser Ala Pro Arg Ala Gly Lys Ala His Leu Lys Arg Ala Ile		
1	5	10 15
Leu Gly Gln Glu Glu Ala Leu Arg Leu His Ala Leu Cys Arg Val Leu		
	20	25 30
Arg Glu Val Asp Leu Leu Arg Ala Val Ile Ser Gln Thr Leu Gln Arg		
	35	40 45
Ser Leu Ala Lys Tyr Ala Glu Leu Asp Arg Glu Asp Asp Phe Cys Glu		
	50	55 60
Ala Ala Glu Ala Pro Asp Ile Gln Pro Lys Thr His Gln Lys Pro Glu		
	65	70 75 80
Ala Arg Met Pro Arg Leu Ser Gln Gly Lys Gly Pro Asp Ile Phe His		
	85	90 95
Arg Leu Gly Pro Leu Ser Val Phe Ser Ala Lys Asn Arg Trp Arg Leu		
	100	105 110
Val Gly Pro Val His Leu Thr Arg Gly Glu Gly Gly Phe Gly Leu Thr		
	115	120 125

990

Leu Arg Gly Asp Ser Pro Val Leu Ile Ala Ala Val Ile Pro Gly Ser  
 130 135 140  
 Gln Ala Ala Ala Ala Gly Leu Lys Glu Gly Asp Tyr Ile Val Ser Val  
 145 150 155 160  
 Asn Gly Gln Pro Cys Arg Trp Trp Arg His Ala Glu Val Val Thr Glu  
 165 170 175  
 Leu Lys Ala Ala Gly Glu Ala Gly Ala Ser Leu Gln Val Val Ser Leu  
 180 185 190  
 Leu Pro Ser Ser Arg Leu Pro Ser Leu Gly Asp Arg Arg Pro Val Leu  
 195 200 205  
 Leu Gly Pro Arg Gly Leu Leu Arg Ser Gln Arg Glu His Gly Cys Lys  
 210 215 220  
 Thr Pro Ala Ser Thr Trp Ala Ser Pro Arg Ala Leu Leu Asn Trp Ser  
 225 230 235 240  
 Arg Lys Ala Gln Gln Gly Lys Thr Gly Gly Cys Pro Ser Pro Val Pro  
 245 250 255  
 Gln

&lt;210&gt; 1017

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1017

Ala Ser Asp Arg Arg Gly Tyr Ser Ser Arg Ile Val Gly Gly Asn Met  
 1 5 10 15  
 Ser Leu Leu Ser Gln Trp Pro Trp Gln Ala Ser Leu Gln Phe Gln Gly  
 20 25 30  
 Tyr His Leu Cys Gly Gly Ser Val Ile Thr Pro Leu Trp Ile Ile Thr  
 35 40 45  
 Ala Ala His Cys Val Tyr Asp Leu Tyr Leu Pro Lys Ser Trp Thr Ile  
 50 55 60  
 Gln Val Gly Leu Val Ser Leu Leu Asp Asn Pro Ala Pro Ser His Leu  
 65 70 75 80

991

Val Glu Lys Ile Val Tyr His Ser Lys Tyr Lys Pro Lys Arg Leu Gly  
                     85                                    90                                    95  
 Asn Asp Ile Ala Leu Met Lys Leu Ala Gly Pro Leu Thr Phe Asn Glu  
                     100                                    105                                    110  
 Met Ile Gln Pro Val Cys Leu Pro Asn Ser Glu Glu Asn Phe Pro Asp  
                     115                                    120                                    125  
 Gly Lys Val Cys Trp Thr Ser Gly Trp Gly Ala Thr Glu Asp Gly Ala  
                     130                                    135                                    140  
 Gly Asp Ala Ser Pro Val Leu Asn His Ala Ala Val Pro Leu Ile Ser  
                     145                                    150                                    155                                    160  
 Asn Lys Ile Cys Asn His Arg Asp Val Tyr Gly Gly Ile Ile Ser Pro  
                     165                                    170                                    175  
 Ser Met Leu Cys Ala Gly Tyr Leu Thr Gly Gly Val Asp Ser Cys Gln  
                     180                                    185                                    190  
 Gly Asp Ser Gly Gly Pro Leu Val Cys Gln Glu Arg Arg Leu Trp Lys  
                     195                                    200                                    205  
 Leu Val Gly Ala Thr Ser Phe Gly Ile Gly Cys Ala Glu Val Asn Lys  
                     210                                    215                                    220  
 Pro Gly Val Tyr Thr Arg Val Thr Ser Phe Leu Asp Trp Ile His Glu  
                     225                                    230                                    235                                    240  
 Gln Met Glu Arg Asp Leu Lys Thr  
                     245

&lt;210&gt; 1018

&lt;211&gt; 224

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1018

Gly Arg Val Ser Ala Pro Val Pro Gly Lys Met Val Leu Gly Gly Cys  
     1                    5                                    10                                    15  
 Pro Val Ser Tyr Leu Leu Leu Cys Gly Gln Ala Ala Leu Leu Gly  
                     20                                    25                                    30  
 Asn Leu Leu Leu Leu His Cys Val Ser Arg Ser His Ser Gln Asn Ala  
                     35                                    40                                    45  
 Thr Ala Glu Pro Glu Leu Thr Ser Ala Gly Ala Ala Gln Pro Glu Gly

992

50	55	60
Pro Gly Gly Ala Ala Ser Trp Glu Tyr Gly Asp Pro His Ser Pro Val		
65	70	75 80
Ile Leu Cys Ser Tyr Leu Pro Asp Glu Phe Ile Glu Cys Glu Asp Pro		
	85	90 95
Val Asp His Val Gly Asn Ala Thr Ala Ser Gln Glu Leu Gly Tyr Gly		
	100	105 110
Cys Leu Lys Phe Gly Gly Gln Ala Tyr Ser Asp Val Glu His Thr Ser		
	115	120 125
Val Gln Cys His Ala Leu Asp Gly Ile Glu Cys Ala Ser Pro Arg Thr		
	130	135 140
Phe Leu Arg Glu Asn Lys Pro Cys Ile Lys Tyr Thr Gly His Tyr Phe		
	145	150 155 160
Ile Thr Thr Leu Leu Tyr Ser Phe Phe Leu Gly Cys Phe Gly Val Asp		
	165	170 175
Arg Phe Cys Leu Gly His Thr Gly Thr Ala Val Gly Lys Leu Leu Thr		
	180	185 190
Leu Gly Gly Leu Gly Ile Trp Trp Phe Val Asp Leu Ile Leu Leu Ile		
	195	200 205
Thr Gly Gly Leu Met Pro Ser Asp Gly Ser Asn Trp Cys Thr Val Tyr		
	210	215 220

&lt;210&gt; 1019

&lt;211&gt; 53

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1019

Asn Val Pro Val Cys His Leu Ser Thr Trp Lys Ile Leu Tyr Ile Trp
1 5 10 15
Lys Val Tyr Ala Ser Leu Asn Lys Tyr Met Leu Leu Asn Lys Pro Tyr
20 25 30
His Ser Leu Arg Asn Cys Ile Tyr Phe Ile Ile Cys Pro Phe Arg Asn
35 40 45

993

Gln Val Phe Cys Ile  
50

<210> 1020

<211> 70

<212> PRT

<213> Homo sapiens

<400> 1020

Phe Tyr Thr Asn Leu Ile Trp Leu Pro Phe Val Pro Leu Ile Ser Gln  
1 5 10 15

Met Phe Lys Cys Ile Gly Phe Gly Phe Ser Met Tyr Lys Leu Pro Tyr  
20 25 30

Leu Leu Met Ser Ile Phe Cys Leu Phe Asn Phe Val Tyr Leu Leu Phe  
35 40 45

Cys Phe Trp Ile His Phe Leu Ile Arg Ser His Met Ile Asn Ile Ile  
50 55 60

Ser Ile Val Ile Ile Pro  
65 70

<210> 1021

<211> 337

<212> PRT

<213> Homo sapiens

<400> 1021

Arg Lys Arg Lys Gln Ala Ala Arg Ala Ala Glu Glu Pro Gly Ala Ala  
1 5 10 15

Met Asp Val Arg Ala Leu Pro Trp Leu Pro Trp Leu Leu Trp Leu Leu  
20 25 30

Cys Arg Gly Gly Gly Asp Ala Asp Ser Arg Ala Pro Phe Thr Pro Thr  
35 40 45

Trp Pro Arg Ser Arg Glu Arg Glu Ala Ala Ala Phe Arg Glu Ser Leu  
50 55 60

Asn Arg His Arg Tyr Leu Asn Ser Leu Phe Pro Ser Glu Asn Ser Thr  
65 70 75 80

Ala Phe Tyr Gly Ile Asn Gln Phe Ser Tyr Leu Phe Pro Glu Glu Phe



994

[illegible]

995

&lt;210&gt; 1022

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1022

Ala Ser Ala Glu Phe Glu Met Ala Gly Gly Lys Ala Gly Lys Asp Ser  
1 5 10 15

Gly Lys Ala Lys Thr Lys Ala Val Ser Arg Ser Gln Arg Ala Gly Leu  
20 25 30

Gln Phe Pro Val Gly Arg Ile His Arg His Leu Lys Ser Arg Thr Thr  
35 40 45

Ser His Gly Arg Val Gly Ala Thr Ala Ala Val Tyr Ser Ala Ala Ile  
50 55 60

Leu Glu Tyr Leu Thr Ala Glu Val Leu Glu Leu Ala Gly Asn Ala Ser  
65 70 75 80

Lys Asp Leu Lys Val Lys Arg Ile Thr Pro Arg His Leu Gln Leu Ala  
85 90 95

Ile Arg Gly Asp Glu Glu Leu Asp Ser Leu Ile Lys Ala Thr Ile Ala  
100 105 110

Gly Gly Gly Val Ile Pro His Ile His Lys Ser Leu Ile Gly Lys Lys  
115 120 125

Gly Gln Gln Lys Thr Val  
130

&lt;210&gt; 1023

&lt;211&gt; 226

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

996

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1023

Gly Leu Phe Gln Thr Cys Ile His Leu Leu Thr Leu Pro Val Leu Val  
 1 5 10 15

His Gly Glu Leu Phe Ala Pro Pro Arg Trp Leu Arg Arg Ala Ala Gly  
 20 25 30

Xaa Pro Trp Thr Leu Val Thr Ser Cys Xaa Ser Leu Arg Pro Ser Gly  
 35 40 45

Pro Cys Pro Arg Pro Gly Arg Ala Leu Leu Pro Ser Cys Ala Pro Ala  
 50 55 60

Ala Arg Xaa Pro Trp Gly Gly Val Val Trp Cys Trp Glu Gly Val Leu  
 65 70 75 80

Gln Gly Glu Glu Asp Leu Glu Gly Leu Gly Ala Ala Val Leu Asn Arg  
 85 90 95

Leu Thr Leu Arg Arg Pro Leu Ser Ala Ala Leu Leu Phe Ile Thr Val  
 100 105 110

Pro His Ser Gly Arg Arg Ser Pro Val Ala Gly Gln Val Pro Met Ala  
 115 120 125

Cys Ser Leu Glu Pro Asp Phe Arg Cys Phe Gly Ile Arg Ser Pro Gln  
 130 135 140

His Arg Gln Val His Pro Ile Ile Thr Leu Pro Val Pro Gly Trp Ala  
 145 150 155 160

Gly Asp Ser Gly Thr Val Met Pro Gly Ala Arg Thr Ala Ala Leu Pro  
 165 170 175

Leu His Thr Asp Gly Leu Gly Val Ala Leu Arg Pro His Pro Thr Leu  
 180 185 190

Ile Ser Gly Arg Gly Ser Pro Glu Trp Ser Leu Val Arg Ala Val Ala  
 195 200 205

Lys Pro Ala Val Ser Phe Leu His Lys Val Pro Pro Pro Leu Ser Val  
 210 215 220

Ser Gly  
 225

997

&lt;210&gt; 1024

&lt;211&gt; 760

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (330)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1024

Gln Gly Lys Lys Arg Ala Gly Asn Phe Ala Ile Met Glu Ile Gln Cys  
 1 5 10 15

Pro Ala Leu Arg Lys Thr Leu Pro Ile Leu Phe Gly Ser Leu Arg Arg  
 20 25 30

Cys Leu Cys Leu Ser Asp Lys Tyr Ser Gln Ala Cys His Pro Leu Gly  
 35 40 45

Ser Lys Val Arg Arg Cys Arg Lys Pro Gly Pro Arg Asp Arg Gln Leu  
 50 55 60

Thr Arg Val Asp Lys Ser Pro Glu Met Trp Cys Ile Val Leu Phe Ser  
 65 70 75 80

Leu Leu Ala Trp Val Tyr Ala Glu Pro Thr Met Tyr Gly Glu Ile Leu  
 85 90 95

Ser Pro Asn Tyr Pro Gln Ala Tyr Pro Ser Glu Val Glu Lys Ser Trp  
 100 105 110

Asp Ile Glu Val Pro Glu Gly Tyr Gly Ile His Leu Tyr Phe Thr His  
 115 120 125

Leu Asp Ile Glu Leu Ser Glu Asn Cys Ala Tyr Asp Ser Val Gln Ile  
 130 135 140

Ile Ser Gly Asp Thr Glu Glu Gly Arg Leu Cys Gly Gln Arg Ser Ser  
 145 150 155 160

Asn Asn Pro His Ser Pro Ile Val Glu Glu Phe Gln Val Pro Tyr Asn  
 165 170 175

Lys Leu Gln Val Ile Phe Lys Ser Asp Phe Ser Asn Glu Glu Arg Phe  
 180 185 190

Thr Gly Phe Ala Ala Tyr Tyr Val Ala Thr Asp Ile Asn Glu Cys Thr  
 195 200 205

Asp Phe Val Asp Val Pro Cys Ser His Phe Cys Asn Asn Phe Ile Gly  
 210 215 220  
 Gly Tyr Phe Cys Ser Cys Pro Pro Glu Tyr Phe Leu His Asp Asp Met  
 225 230 235 240  
 Lys Asn Cys Gly Val Asn Cys Ser Gly Asp Val Phe Thr Ala Leu Ile  
 245 250 255  
 Gly Glu Ile Ala Ser Pro Asn Tyr Pro Lys Pro Tyr Pro Glu Asn Ser  
 260 265 270  
 Arg Cys Glu Tyr Gln Ile Arg Leu Glu Lys Gly Phe Gln Val Val Val  
 275 280 285  
 Thr Leu Arg Arg Glu Asp Phe Asp Val Glu Ala Ala Asp Ser Ala Gly  
 290 295 300  
 Asn Cys Leu Asp Ser Leu Val Phe Val Ala Gly Asp Arg Gln Phe Gly  
 305 310 315 320  
 Pro Tyr Cys Gly His Gly Phe Pro Gly Xaa Leu Asn Ile Glu Thr Lys  
 325 330 335  
 Ser Asn Ala Leu Asp Ile Ile Phe Gln Thr Asp Leu Thr Gly Gln Lys  
 340 345 350  
 Lys Gly Trp Lys Leu Arg Tyr His Gly Asp Pro Met Pro Cys Pro Lys  
 355 360 365  
 Glu Asp Thr Pro Asn Ser Val Trp Glu Pro Ala Lys Ala Lys Tyr Val  
 370 375 380  
 Phe Arg Asp Val Val Gln Ile Thr Cys Leu Asp Gly Phe Glu Val Val  
 385 390 395 400  
 Glu Gly Arg Val Gly Ala Thr Ser Phe Tyr Ser Thr Cys Gln Ser Asn  
 405 410 415  
 Gly Lys Trp Ser Asn Ser Lys Leu Lys Cys Gln Pro Val Asp Cys Gly  
 420 425 430  
 Ile Pro Glu Ser Ile Glu Asn Gly Lys Val Glu Asp Pro Glu Ser Thr  
 435 440 445  
 Leu Phe Gly Ser Val Ile Arg Tyr Thr Cys Glu Glu Pro Tyr Tyr Tyr  
 450 455 460  
 Met Glu Asn Gly Gly Gly Gly Glu Tyr His Cys Ala Gly Asn Gly Ser  
 465 470 475 480

999

Trp	Val	Asn	Glu	Val	Leu	Gly	Pro	Glu	Leu	Pro	Lys	Cys	Val	Pro	Val	485	490	495	
Cys	Gly	Val	Pro	Arg	Glu	Pro	Phe	Glu	Glu	Lys	Gln	Arg	Ile	Ile	Gly	500	505	510	
Gly	Ser	Asp	Ala	Asp	Ile	Lys	Asn	Phe	Pro	Trp	Gln	Val	Phe	Phe	Asp	515	520	525	
Asn	Pro	Trp	Ala	Gly	Gly	Ala	Leu	Ile	Asn	Glu	Tyr	Trp	Val	Leu	Thr	530	535	540	
Ala	Ala	His	Val	Val	Glu	Gly	Asn	Arg	Glu	Pro	Thr	Met	Tyr	Val	Gly	545	550	555	560
Ser	Thr	Ser	Val	Gln	Thr	Ser	Arg	Leu	Ala	Lys	Ser	Lys	Met	Leu	Thr	565	570	575	
Pro	Glu	His	Val	Phe	Ile	His	Pro	Gly	Trp	Lys	Leu	Leu	Glu	Val	Pro	580	585	590	
Glu	Gly	Arg	Thr	Asn	Phe	Asp	Asn	Asp	Ile	Ala	Leu	Val	Arg	Leu	Lys	595	600	605	
Asp	Pro	Val	Lys	Met	Gly	Pro	Thr	Val	Ser	Pro	Ile	Cys	Leu	Pro	Gly	610	615	620	
Thr	Ser	Ser	Asp	Tyr	Asn	Leu	Met	Asp	Gly	Asp	Leu	Gly	Leu	Ile	Ser	625	630	635	640
Gly	Trp	Gly	Arg	Thr	Glu	Lys	Arg	Asp	Arg	Ala	Val	Arg	Leu	Lys	Ala	645	650	655	
Ala	Arg	Leu	Pro	Val	Ala	Pro	Leu	Arg	Lys	Cys	Lys	Glu	Val	Lys	Val	660	665	670	
Glu	Lys	Pro	Thr	Ala	Asp	Ala	Glu	Ala	Tyr	Val	Phe	Thr	Pro	Asn	Met	675	680	685	
Ile	Cys	Ala	Gly	Gly	Glu	Lys	Gly	Met	Asp	Ser	Cys	Lys	Gly	Asp	Ser	690	695	700	
Gly	Gly	Ala	Phe	Ala	Val	Gln	Asp	Pro	Asn	Asp	Lys	Thr	Lys	Phe	Tyr	705	710	715	720
Ala	Ala	Gly	Leu	Val	Ser	Trp	Gly	Pro	Gln	Cys	Gly	Thr	Tyr	Gly	Leu	725	730	735	
Tyr	Thr	Arg	Val	Lys	Asn	Tyr	Val	Asp	Trp	Ile	Met	Lys	Thr	Met	Gln	740	745	750	

1000

Glu Asn Ser Thr Pro Arg Glu Asp  
           755                    760

&lt;210&gt; 1025

&lt;211&gt; 216

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (115)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (139)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1025

Gly Gly Gly Arg Leu Arg Arg Arg Arg Ser Gly Ser Pro Gly Trp Arg  
   1                    5                    10                    15

Ala Pro Arg Thr Gly Met Leu Leu Gly Leu Ala Ala Met Glu Leu Lys  
                     20                    25                    30

Val Trp Val Asp Gly Ile Gln Arg Val Val Cys Gly Val Ser Glu Gln  
                     35                    40                    45

Thr Thr Cys Gln Glu Val Val Ile Ala Leu Ala Gln Ala Ile Gly Gln  
                     50                    55                    60

Thr Gly Arg Phe Val Leu Val Gln Arg Leu Arg Glu Lys Glu Arg Gln  
   65                    70                    75                    80

Leu Leu Pro Gln Glu Cys Pro Val Gly Ala Gln Ala Thr Cys Gly Gln  
                     85                    90                    95

Phe Ala Ser Asp Val Gln Phe Val Leu Arg Arg Thr Gly Pro Ser Leu  
                     100                    105                    110

Ala Gly Xaa Pro Ser Ser Asp Ser Cys Pro Pro Pro Glu Arg Cys Leu  
                     115                    120                    125

Ile Arg Ala Ser Leu Pro Val Lys Pro Arg Xaa Ala Leu Gly Cys Glu  
                     130                    135                    140

Pro Arg Lys Thr Leu Thr Pro Glu Pro Ala Pro Ser Leu Ser Arg Pro  
  145                    150                    155                    160

1001

Gly Pro Ala Ala Cys Glu His Pro His Gln Ala Ala Ala Gln Thr Cys  
                                   165                                  170                                  175

Gly Ala Trp Ser Ser Gly Cys Arg Gly Met Leu Arg Ser Trp Ala Met  
                                   180                                  185                                  190

Arg Pro Ser Gly Ser Lys Ser Cys Ala Gly Ser Arg Pro Gly Ser Glu  
                                   195                                  200                                  205

Arg Asp Arg His Ala Cys Arg His  
                                   210                                  215

<210> 1026

<211> 604

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (303)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (359)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1026

Gly Thr Ser Ser Asp Ile Leu Lys Gly Asn Phe Ser Ile Arg Thr Ala  
       1                                  5                                  10                                  15

Lys Met Gln Gln His Val Cys Glu Thr Ile Ile Arg Ile Phe Lys Arg  
                                   20                                  25                                  30

His Gly Ala Val Gln Leu Cys Thr Pro Leu Leu Leu Pro Arg Asn Arg  
                                   35                                  40                                  45

Gln Ile Tyr Glu His Asn Glu Ala Ala Leu Phe Met Asp His Ser Gly  
                                   50                                  55                                  60

Met Leu Val Met Leu Pro Phe Asp Leu Arg Ile Pro Phe Ala Arg Tyr  
       65                                  70                                  75                                  80

Val Ala Arg Asn Asn Ile Leu Asn Leu Lys Arg Tyr Cys Ile Glu Arg  
                                   85                                  90                                  95

Val Phe Arg Pro Arg Lys Leu Asp Arg Phe His Pro Lys Glu Leu Leu  
                                   100                                  105                                  110



1002

Glu Cys Ala Phe Asp Ile Val Thr Ser Thr Thr Asn Ser Phe Leu Pro  
 115 120 125  
 Thr Ala Glu Ile Ile Tyr Thr Ile Tyr Glu Ile Ile Gln Glu Phe Pro  
 130 135 140  
 Ala Leu Gln Glu Arg Asn Tyr Ser Ile Tyr Leu Asn His Thr Met Leu  
 145 150 155 160  
 Leu Lys Ala Ile Leu Leu His Cys Gly Ile Pro Glu Asp Lys Leu Ser  
 165 170 175  
 Gln Val Tyr Ile Ile Leu Tyr Asp Ala Val Thr Glu Lys Leu Thr Arg  
 180 185 190  
 Arg Glu Val Glu Ala Lys Phe Cys Asn Leu Ser Leu Ser Ser Asn Ser  
 195 200 205  
 Leu Cys Arg Leu Tyr Lys Phe Ile Glu Gln Lys Gly Asp Leu Gln Asp  
 210 215 220  
 Leu Met Pro Thr Ile Asn Ser Leu Ile Lys Gln Lys Thr Gly Ile Ala  
 225 230 235 240  
 Gln Leu Val Lys Tyr Gly Leu Lys Asp Leu Glu Glu Val Val Gly Leu  
 245 250 255  
 Leu Lys Lys Leu Gly Ile Lys Leu Gln Val Leu Ile Asn Leu Gly Leu  
 260 265 270  
 Val Tyr Lys Val Gln Gln His Asn Gly Ile Ile Phe Gln Phe Val Ala  
 275 280 285  
 Phe Ile Lys Arg Arg Gln Arg Ala Val Pro Glu Ile Leu Ala Xaa Gly  
 290 295 300  
 Gly Arg Tyr Asp Leu Leu Ile Pro Gln Phe Arg Gly Pro Gln Ala Leu  
 305 310 315 320  
 Gly Pro Val Pro Thr Ala Ile Gly Val Ser Ile Ala Ile Asp Lys Ile  
 325 330 335  
 Ser Ala Ala Val Leu Asn Met Glu Glu Ser Val Thr Ile Ser Ser Cys  
 340 345 350  
 Asp Leu Leu Val Val Ser Xaa Gly Gln Met Ser Met Ser Arg Ala Ile  
 355 360 365  
 Asn Leu Thr Gln Lys Leu Trp Thr Ala Gly Ile Thr Ala Glu Ile Met  
 370 375 380

1003

Tyr Asp Trp Ser Gln Ser Gln Glu Glu Leu Gln Glu Tyr Cys Arg His  
 385 390 395 400

His Glu Ile Thr Tyr Val Ala Leu Val Ser Asp Lys Glu Gly Ser His  
 405 410 415

Val Lys Val Lys Ser Phe Glu Lys Glu Arg Gln Thr Glu Lys Arg Val  
 420 425 430

Leu Glu Thr Glu Leu Val Asp His Val Leu Gln Lys Leu Arg Thr Lys  
 435 440 445

Val Thr Asp Glu Arg Asn Gly Arg Glu Ala Ser Asp Asn Leu Ala Val  
 450 455 460

Gln Asn Leu Lys Gly Ser Phe Ser Asn Ala Ser Gly Leu Phe Glu Ile  
 465 470 475 480

His Gly Ala Thr Val Val Pro Ile Val Ser Val Leu Ala Pro Glu Lys  
 485 490 495

Leu Ser Ala Ser Thr Arg Arg Arg Tyr Glu Thr Gln Val Gln Thr Arg  
 500 505 510

Leu Gln Thr Ser Leu Ala Asn Leu His Gln Lys Ser Ser Glu Ile Glu  
 515 520 525

Ile Leu Ala Val Asp Leu Pro Lys Glu Thr Ile Leu Gln Phe Leu Ser  
 530 535 540

Leu Glu Trp Asp Ala Asp Glu Gln Ala Phe Asn Thr Thr Val Lys Gln  
 545 550 555 560

Leu Leu Ser Arg Leu Pro Lys Gln Arg Tyr Leu Lys Leu Val Cys Asp  
 565 570 575

Glu Ile Tyr Asn Ile Lys Val Glu Lys Lys Val Ser Val Leu Phe Leu  
 580 585 590

Tyr Ser Tyr Arg Asp Asp Tyr Tyr Arg Ile Leu Phe  
 595 600

&lt;210&gt; 1027

&lt;211&gt; 459

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1004

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1027

Thr	Ser	Cys	Gly	Ile	Asn	Thr	Lys	Phe	Thr	Ser	Lys	Glu	Pro	Ile	Phe
1				5					10					15	

Leu	Thr	Gln	Leu	Leu	His	Phe	Ser	Asn	Leu	Xaa	Gln	Glu	Tyr	Lys	Ile
		20						25					30		

Asn	Ser	Arg	Leu	Leu	Gln	Asn	Ile	Leu	Asp	Ala	Gly	Phe	Gln	Met	Pro
		35					40					45			

Thr	Pro	Ile	Gln	Met	Gln	Ala	Ile	Pro	Val	Met	Leu	His	Gly	Arg	Glu
	50					55					60				

Leu	Leu	Ala	Ser	Ala	Pro	Thr	Gly	Ser	Gly	Lys	Thr	Leu	Ala	Phe	Ser
65					70					75					80

Ile	Pro	Ile	Leu	Met	Gln	Leu	Lys	Gln	Pro	Ala	Asn	Lys	Gly	Phe	Arg
			85						90					95	

Ala	Leu	Ile	Ile	Ser	Pro	Thr	Arg	Glu	Leu	Ala	Ser	Gln	Ile	His	Arg
		100						105					110		

Glu	Leu	Ile	Lys	Ile	Ser	Glu	Gly	Thr	Gly	Phe	Arg	Ile	His	Met	Ile
	115						120					125			

His	Lys	Ala	Ala	Val	Ala	Ala	Lys	Lys	Phe	Gly	Pro	Lys	Ser	Ser	Lys
	130					135					140				

Lys	Phe	Asp	Ile	Leu	Val	Thr	Thr	Pro	Asn	Arg	Leu	Ile	Tyr	Leu	Leu
145					150					155					160

Lys	Gln	Asp	Pro	Pro	Gly	Ile	Asp	Leu	Ala	Ser	Val	Glu	Trp	Leu	Val
			165						170					175	

Val	Asp	Glu	Ser	Asp	Lys	Leu	Phe	Glu	Asp	Gly	Lys	Thr	Gly	Phe	Arg
		180						185					190		

Asp	Gln	Leu	Ala	Ser	Ile	Phe	Leu	Ala	Cys	Thr	Ser	His	Lys	Val	Arg
		195					200					205			

Arg	Ala	Met	Phe	Ser	Ala	Thr	Phe	Ala	Tyr	Asp	Val	Glu	Gln	Trp	Cys
	210					215					220				

Lys	Leu	Asn	Leu	Asp	Asn	Val	Ile	Ser	Val	Ser	Ile	Gly	Ala	Arg	Asn
225					230					235					240

Ser	Ala	Val	Glu	Thr	Val	Glu	Gln	Glu	Leu	Leu	Phe	Val	Gly	Ser	Glu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1005

	245		250		255
Thr Gly Lys Leu Leu Ala Val Arg Glu Leu Val Lys Lys Gly Phe Asn					
	260		265		270
Pro Pro Val Leu Val Phe Val Gln Ser Ile Glu Arg Ala Lys Glu Leu					
	275		280		285
Phe His Glu Leu Ile Tyr Glu Gly Ile Asn Val Asp Val Ile His Ala					
	290		295		300
Glu Arg Thr Gln Gln Gln Arg Asp Asn Thr Val His Ser Phe Arg Ala					
	305		310		315
Gly Lys Ile Trp Val Leu Ile Cys Thr Ala Leu Leu Ala Arg Gly Ile					
	325		330		335
Asp Phe Lys Gly Val Asn Leu Val Ile Asn Tyr Asp Phe Pro Thr Ser					
	340		345		350
Ser Val Glu Tyr Ile His Arg Ile Gly Arg Thr Gly Arg Ala Gly Asn					
	355		360		365
Lys Gly Lys Ala Ile Thr Phe Phe Thr Glu Asp Asp Lys Pro Leu Leu					
	370		375		380
Arg Ser Val Ala Asn Val Ile Gln Gln Ala Gly Cys Pro Val Pro Glu					
	385		390		395
Tyr Ile Lys Gly Phe Gln Lys Leu Leu Ser Lys Gln Lys Lys Lys Met					
	405		410		415
Ile Lys Lys Pro Leu Glu Arg Glu Ser Ile Ser Thr Thr Pro Lys Cys					
	420		425		430
Phe Leu Glu Lys Ala Lys Asp Lys Gln Lys Lys Val Thr Gly Gln Asn					
	435		440		445
Ser Lys Lys Lys Val Ala Leu Glu Asp Lys Ser					
	450		455		

&lt;210&gt; 1028

&lt;211&gt; 68

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1028

Gln Arg Gly Phe Tyr Ala Asn Ala Leu Thr Ser Ala Leu Gly Asn Glu
1 5 10 15

1006

Arg Val Thr Ser Ala Ser Ser Leu Ala Ser Phe Leu Val Leu Glu Arg  
                   20                  25                  30

Leu Thr Asn Val Cys His Ser His Lys Cys Phe Glu Leu Asp Leu Cys  
                   35                  40                  45

Asp Leu Cys Phe Phe Ser Phe Ser Leu Glu Ser Glu Tyr His Cys Leu  
                   50                  55                  60

Pro Pro Arg Ser  
   65

<210> 1029  
 <211> 215  
 <212> PRT  
 <213> Homo sapiens

<400> 1029  
 Tyr Pro Leu Thr Pro Ala Pro Ala Pro His Asp Pro Ser Pro Arg Ala  
   1                  5                  10                  15

His Gly Arg Gly Asp Asp Val Thr Gln Ala Thr Ala Leu Thr Ser His  
                   20                  25                  30

Ile Thr Val Val Met Ala Ser Arg Gly His Val Asp Val Thr Lys Arg  
                   35                  40                  45

Tyr Ser Asp Gly Val Val Gln Met Gln His Val Ala His Arg His Gly  
                   50                  55                  60

Glu Leu Gly Met Thr Ser His Arg Asp Ala Ala Thr Thr Ser Arg Ala  
   65                  70                  75                  80

Met Ser Thr Ser His Ile Leu Met Ser His Arg Arg Gly Asp Gly Ile  
                   85                  90                  95

Thr Gln Thr Val Met Met Ser His Thr Asp Thr Val Thr Thr His Thr  
                   100                  105                  110

Met Thr Thr Thr Pro Ile Asp Met Ala Pro Thr Ser His Ala Arg Met  
                   115                  120                  125

Pro Phe His Thr His Phe Leu Pro Asn Ser His Leu Val Ser Arg Ser  
                   130                  135                  140

Pro Asp Pro Gly Thr Arg Ala Lys Val Pro Thr Gly Ser His Pro Leu  
   145                  150                  155                  160

1007

Pro His Ser Pro Gly Pro Gln His Leu Pro Ser Ser Ser Phe Leu Ala  
                   165                  170                  175

Ser Gln Pro Leu Pro His Pro Gln Cys Leu Asp Pro Glu Val Arg Thr  
                   180                  185                  190

Gly Ser His Ser Pro Pro Leu Leu Glu Arg Glu Cys Phe Gln Asp Pro  
                   195                  200                  205

Leu Gly Ala Leu Ser Arg Gly  
           210                  215

&lt;210&gt; 1030

&lt;211&gt; 297

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1030

Lys Val Arg Leu Gln Val Pro Val Arg Asn Ser Arg Val Asp Pro Arg  
   1                  5                  10                  15

Val Arg Pro Arg Val Arg Pro Arg Val Arg Trp Thr Ala Ala Met Arg  
                   20                  25                  30

Leu Thr Val Leu Cys Ala Val Cys Leu Leu Pro Gly Ser Leu Ala Leu  
                   35                  40                  45

Pro Leu Pro Gln Glu Ala Gly Gly Met Ser Glu Leu Gln Trp Glu Gln  
                   50                  55                  60

Ala Gln Asp Tyr Leu Lys Arg Phe Tyr Leu Tyr Asp Ser Glu Thr Lys  
   65                  70                  75                  80

Asn Ala Asn Ser Leu Glu Ala Lys Leu Lys Glu Met Gln Lys Phe Phe  
                   85                  90                  95

Gly Leu Pro Ile Thr Gly Met Leu Asn Ser Arg Val Ile Glu Ile Met  
                   100                  105                  110

Gln Lys Pro Arg Cys Gly Val Pro Asp Val Ala Glu Tyr Ser Leu Phe  
                   115                  120                  125

Pro Asn Ser Pro Lys Trp Thr Ser Lys Val Val Thr Tyr Arg Ile Val  
                   130                  135                  140

Ser Tyr Thr Arg Asp Leu Pro His Ile Thr Val Asp Arg Leu Val Ser  
   145                  150                  155                  160

Lys Ala Leu Asn Met Trp Gly Lys Glu Ile Pro Leu His Phe Arg Lys

1008

	165		170		175
Val Val Trp Gly Thr Ala Asp Ile Met Ile Gly Phe Ala Arg Gly Ala					
	180		185		190
His Gly Asp Ser Tyr Pro Phe Asp Gly Pro Gly Asn Thr Leu Ala His					
	195		200		205
Ala Phe Ala Pro Gly Thr Gly Leu Gly Gly Asp Ala His Phe Asp Glu					
	210		215		220
Asp Glu Arg Trp Thr Asp Gly Ser Ser Leu Gly Ile Asn Phe Leu Tyr					
	225		230		240
Ala Ala Thr His Glu Leu Gly His Ser Leu Gly Met Gly His Ser Ser					
	245		250		255
Asp Pro Asn Ala Val Met Tyr Pro Thr Tyr Gly Asn Gly Asp Pro Gln					
	260		265		270
Asn Phe Lys Leu Ser Gln Asp Asp Ile Lys Gly Ile Gln Lys Leu Tyr					
	275		280		285
Gly Lys Arg Ser Asn Ser Arg Lys Lys					
	290		295		

&lt;210&gt; 1031

&lt;211&gt; 571

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (81)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (484)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1031

Arg Val Arg Ser Lys Val Pro Arg Cys Val Asn Thr Gln Pro Gly Phe
1 5 10 15

1009

His Cys Leu Pro Cys Pro Pro Arg Tyr Arg Gly Asn Gln Pro Val Gly  
                   20                  25                  30

Val Gly Leu Glu Ala Ala Lys Thr Glu Lys Gln Xaa Cys Glu Pro Glu  
                   35                  40                  45

Asn Pro Cys Lys Asp Lys Thr His Asn Cys His Lys His Ala Glu Cys  
                   50                  55                  60

Ile Tyr Leu Gly His Phe Ser Asp Pro Met Tyr Lys Cys Glu Cys Gln  
                   65                  70                  75                  80

Xaa Gly Tyr Ala Gly Asp Gly Leu Ile Cys Gly Glu Asp Ser Asp Leu  
                   85                  90                  95

Asp Gly Trp Pro Asn Leu Asn Leu Val Cys Ala Thr Asn Ala Thr Tyr  
                   100                  105                  110

His Cys Ile Lys Asp Asn Cys Pro His Leu Pro Asn Ser Gly Gln Glu  
                   115                  120                  125

Asp Phe Asp Lys Asp Gly Ile Gly Asp Ala Cys Asp Asp Asp Asp Asp  
                   130                  135                  140

Asn Asp Gly Val Thr Asp Glu Lys Asp Asn Cys Gln Leu Leu Phe Asn  
                   145                  150                  155                  160

Pro Arg Gln Ala Asp Tyr Asp Lys Asp Glu Val Gly Asp Arg Cys Asp  
                   165                  170                  175

Asn Cys Pro Tyr Val His Asn Pro Ala Gln Ile Asp Thr Asp Asn Asn  
                   180                  185                  190

Gly Glu Gly Asp Ala Cys Ser Val Asp Ile Asp Gly Asp Asp Val Phe  
                   195                  200                  205

Asn Glu Arg Asp Asn Cys Pro Tyr Val Tyr Asn Thr Asp Gln Arg Asp  
                   210                  215                  220

Thr Asp Gly Asp Gly Val Gly Asp His Cys Asp Asn Cys Pro Leu Val  
                   225                  230                  235                  240

His Asn Pro Asp Gln Thr Asp Val Asp Asn Asp Leu Val Gly Asp Gln  
                   245                  250                  255

Cys Asp Asn Asn Glu Asp Ile Asp Asp Asp Gly His Gln Asn Asn Gln  
                   260                  265                  270

Asp Asn Cys Pro Tyr Ile Ser Asn Ala Asn Gln Ala Asp His Asp Arg  
                   275                  280                  285



1010

Asp Gly Gln Gly Asp Ala Cys Asp Pro Asp Asp Asp Asn Asp Gly Val  
 290 295 300  
 Pro Asp Asp Arg Asp Asn Cys Arg Leu Val Phe Asn Pro Asp Gln Glu  
 305 310 315 320  
 Asp Leu Asp Gly Asp Gly Arg Gly Asp Ile Cys Lys Asp Asp Phe Asp  
 325 330 335  
 Asn Asp Asn Ile Pro Asp Ile Asp Asp Val Cys Pro Glu Asn Asn Ala  
 340 345 350  
 Ile Ser Glu Thr Asp Phe Arg Asn Phe Gln Met Val Pro Leu Asp Pro  
 355 360 365  
 Lys Gly Thr Thr Gln Ile Asp Pro Asn Trp Val Ile Arg His Gln Gly  
 370 375 380  
 Lys Glu Leu Val Gln Thr Ala Asn Ser Asp Pro Gly Ile Ala Val Gly  
 385 390 395 400  
 Phe Asp Glu Phe Gly Ser Val Asp Phe Ser Gly Thr Phe Tyr Val Asn  
 405 410 415  
 Thr Asp Arg Asp Asp Asp Tyr Ala Gly Phe Val Phe Gly Tyr Gln Ser  
 420 425 430  
 Ser Ser Arg Phe Tyr Val Val Met Trp Lys Gln Val Thr Gln Thr Tyr  
 435 440 445  
 Trp Glu Asp Gln Pro Thr Arg Ala Tyr Gly Tyr Ser Gly Val Ser Leu  
 450 455 460  
 Lys Val Val Asn Ser Thr Thr Gly Thr Gly Glu His Leu Arg Asn Ala  
 465 470 475 480  
 Leu Trp His Xaa Gly Asn Thr Pro Gly Gln Val Arg Thr Leu Trp His  
 485 490 495  
 Asp Pro Arg Asn Ile Gly Trp Lys Asp Tyr Thr Ala Tyr Arg Trp His  
 500 505 510  
 Leu Thr His Arg Pro Lys Thr Gly Tyr Ile Arg Val Leu Val His Glu  
 515 520 525  
 Gly Lys Gln Val Met Ala Asp Ser Gly Pro Ile Tyr Asp Gln Thr Tyr  
 530 535 540  
 Ala Gly Gly Arg Leu Gly Leu Phe Val Phe Ser Gln Glu Met Val Tyr  
 545 550 555 560

1011

Phe Ser Asp Leu Lys Tyr Glu Cys Arg Asp Ile  
565 570

&lt;210&gt; 1032

&lt;211&gt; 114

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1032

Gly Arg Gly Thr Ala Thr Phe Pro Thr Gly His Glu Phe Val Gly Pro  
1 5 10 15

Cys Leu Gly Arg Ala Glu Ala Phe Trp Arg Ser Lys Met Gly Arg Lys  
20 25 30

Asp Ala Ala Thr Ile Lys Leu Pro Val Asp Gln Tyr Arg Lys Gln Ile  
35 40 45

Gly Lys Gln Asp Tyr Lys Lys Thr Lys Pro Ile Leu Arg Ala Thr Lys  
50 55 60

Leu Lys Ala Glu Ala Lys Lys Thr Ala Ile Gly Ile Lys Glu Val Gly  
65 70 75 80

Leu Val Leu Ala Ala Ile Leu Ala Leu Leu Leu Ala Phe Tyr Ala Phe  
85 90 95

Phe Tyr Leu Arg Leu Thr Thr Asp Val Asp Pro Asp Leu Asp Gln Asp  
100 105 110

Glu Asp

&lt;210&gt; 1033

&lt;211&gt; 243

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

1012

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1033

His Arg Arg Asp Glu Ala Leu Gln Ser Leu Arg Phe Arg Arg Arg Pro  
 1 5 10 15

Gly Ala Gln Ala Ala Asp Ala Cys Gly Pro Arg Ala Asp Leu Gly Gly  
 20 25 30

Pro Arg Glu Pro Ala Ala Gly Gly Arg Ala Ala Trp His Arg Pro Ala  
 35 40 45

Ala Arg Gly Gln Ser Pro Arg Arg Cys His Ala Gly Val His Arg Ser  
 50 55 60

Gln Cys His Leu Cys Arg Leu Gly Ala Ala Glu Arg Phe Arg Gly Ile  
 65 70 75 80

Val Ala Leu Leu Ala Ser Arg Xaa Leu Leu Arg Pro Pro Leu His Trp  
 85 90 95

Val Leu Leu Ala Xaa Ala Leu Val Asn Leu Leu Leu Ser Val Ala Cys  
 100 105 110

Ser Leu Gly Leu Leu Leu Ala Val Ser Leu Thr Val Ala Asn Gly Gly  
 115 120 125

Arg Arg Leu Ile Ala Asp Cys His Pro Gly Leu Leu Asp Pro Leu Val  
 130 135 140

Pro Leu Asp Glu Gly Pro Gly His Thr Asp Cys Pro Phe Asp Pro Thr  
 145 150 155 160

Arg Ile Tyr Asp Thr Ala Leu Ala Leu Trp Ile Pro Ser Leu Leu Met  
 165 170 175

Ser Ala Gly Glu Ala Ala Leu Ser Gly Tyr Cys Cys Val Ala Ala Leu  
 180 185 190

Thr Leu Arg Gly Val Gly Pro Cys Arg Lys Asp Gly Leu Gln Gly Gln  
 195 200 205

Leu Glu Glu Met Thr Glu Leu Glu Ser Pro Lys Cys Lys Arg Gln Glu  
 210 215 220

Asn Glu Gln Leu Leu Asp Gln Asn Gln Glu Ile Arg Ala Ser Gln Arg  
 225 230 235 240

Ser Trp Val

1013

&lt;210&gt; 1034

&lt;211&gt; 173

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1034

Tyr Thr Trp His Ser Glu Lys Met Asp Leu Lys Asp Lys Asn Gly Gly  
 1 5 10 15

Pro Gly Arg Cys Asn Ser His Arg Leu Lys Val Ser Ser Gly Leu Cys  
 20 25 30

Lys Thr His Glu Ile Gly Phe Asp Pro Leu Ala Leu Lys Cys Pro Leu  
 35 40 45

Arg Ser Arg Thr Ala Pro Trp Trp Pro Leu Asp Arg Val Ser Phe Asp  
 50 55 60

Leu His His Leu Val Ile Gly Asn Phe Phe Val Gly Asn Arg Lys Ile  
 65 70 75 80

Phe Leu Asp Tyr Leu Val Tyr Gly Phe Ala His Asn Asn Arg Trp Lys  
 85 90 95

Leu Leu Val Gln Ser Trp Ser Asp Gly Cys Val His Arg Thr Phe Gly  
 100 105 110

Leu Val Lys Ser Phe Ser Lys Ala Ser Phe Cys Ile Phe Ile Thr Lys  
 115 120 125

Gln Arg Lys Ser Ser Glu Asp Leu Ala Leu Lys Gln Ile Cys Ala Asn  
 130 135 140

Thr Ala Arg Val Ile Leu Lys Leu Lys His Phe His Phe Val Ser Tyr  
 145 150 155 160

Met Cys Thr Phe Leu Phe Thr Cys Glu Asn Gly His Leu  
 165 170

&lt;210&gt; 1035

&lt;211&gt; 241

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1035

Ser Phe Ser Glu Met Ala Gly Val Ser Ala Cys Ile Lys Tyr Ser Met  
 1 5 10 15

1014

Phe Thr Phe Asn Phe Leu Phe Trp Leu Cys Gly Ile Leu Ile Leu Ala  
                   20                  25                  30  
 Leu Ala Ile Trp Val Arg Val Ser Asn Asp Ser Gln Ala Ile Phe Gly  
                   35                  40                  45  
 Ser Glu Asp Val Gly Ser Ser Ser Tyr Val Ala Val Asp Ile Leu Ile  
                   50                  55                  60  
 Ala Val Gly Ala Ile Ile Met Ile Leu Gly Phe Leu Gly Cys Cys Gly  
                   65                  70                  75                  80  
 Ala Ile Lys Glu Ser Arg Cys Met Leu Leu Leu Phe Phe Ile Gly Leu  
                   85                  90                  95  
 Leu Leu Ile Leu Leu Leu Gln Val Ala Thr Gly Ile Leu Gly Ala Val  
                   100                  105                  110  
 Phe Lys Ser Lys Ser Asp Arg Ile Val Asn Glu Thr Leu Tyr Glu Asn  
                   115                  120                  125  
 Thr Lys Leu Leu Ser Ala Thr Gly Glu Ser Glu Lys Gln Phe Gln Glu  
                   130                  135                  140  
 Ala Ile Ile Val Phe Gln Glu Glu Phe Lys Cys Cys Gly Leu Val Asn  
                   145                  150                  155                  160  
 Gly Ala Ala Asp Trp Gly Asn Asn Phe Gln His Tyr Pro Glu Leu Cys  
                   165                  170                  175  
 Ala Cys Leu Asp Lys Gln Arg Pro Cys Gln Ser Tyr Asn Gly Lys Gln  
                   180                  185                  190  
 Val Tyr Lys Glu Thr Cys Ile Ser Phe Ile Lys Asp Phe Leu Ala Lys  
                   195                  200                  205  
 Asn Leu Ile Ile Val Ile Gly Ile Ser Phe Gly Leu Ala Val Ile Glu  
                   210                  215                  220  
 Ile Leu Gly Leu Val Phe Ser Met Val Leu Tyr Cys Gln Ile Gly Asn  
                   225                  230                  235                  240

Lys

&lt;210&gt; 1036

&lt;211&gt; 335

&lt;212&gt; PRT

1015

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1036

Pro Thr Xaa Gly Arg Ala Glu Glu Ala Lys Met Ala Ala Ala Ala Ala  
 1 5 10 15

Ser Leu Arg Gly Val Val Leu Gly Pro Arg Gly Ala Gly Leu Pro Gly  
 20 25 30

Ala Arg Ala Arg Gly Leu Leu Cys Ser Ala Arg Pro Gly Gln Leu Pro  
 35 40 45

Leu Arg Thr Pro Gln Ala Val Ala Leu Ser Ser Lys Ser Gly Leu Ser  
 50 55 60

Arg Gly Arg Lys Val Met Leu Ser Ala Leu Gly Met Leu Ala Ala Gly  
 65 70 75 80

Gly Ala Gly Leu Ala Val Ala Leu His Ser Ala Val Ser Ala Ser Asp  
 85 90 95

Leu Glu Leu His Pro Pro Ser Tyr Pro Trp Ser His Arg Gly Leu Leu  
 100 105 110

Ser Ser Leu Asp His Thr Ser Ile Arg Arg Gly Phe Gln Val Tyr Lys  
 115 120 125

Gln Val Cys Ala Ser Cys His Ser Met Asp Phe Val Ala Tyr Arg His  
 130 135 140

Leu Val Gly Val Cys Tyr Thr Glu Asp Glu Ala Lys Glu Leu Ala Ala  
 145 150 155 160

Glu Val Glu Val Gln Asp Gly Pro Asn Glu Asp Gly Glu Met Phe Met  
 165 170 175

Arg Pro Gly Lys Leu Phe Asp Tyr Phe Pro Lys Pro Tyr Pro Asn Ser  
 180 185 190

Glu Ala Ala Arg Ala Ala Asn Asn Gly Ala Leu Pro Pro Asp Leu Ser  
 195 200 205

Tyr Ile Val Arg Ala Arg His Gly Gly Glu Asp Tyr Val Phe Ser Leu  
 210 215 220

Leu Thr Gly Tyr Cys Glu Pro Pro Thr Gly Val Ser Leu Arg Glu Gly

1016

225                      230                      235                      240  
 Leu Tyr Phe Asn Pro Tyr Phe Pro Gly Gln Ala Ile Ala Met Ala Pro  
                                  245                      250                      255  
 Pro Ile Tyr Thr Asp Val Leu Glu Phe Asp Asp Gly Thr Pro Ala Thr  
                                  260                      265                      270  
 Met Ser Gln Ile Ala Lys Asp Val Cys Thr Phe Leu Arg Trp Ala Ser  
                                  275                      280                      285  
 Glu Pro Glu His Asp His Arg Lys Arg Met Gly Leu Lys Met Leu Met  
                                  290                      295                      300  
 Met Met Ala Leu Leu Val Pro Leu Val Tyr Thr Ile Lys Arg His Lys  
 305                                   310                                   315                                   320  
 Trp Ser Val Leu Lys Ser Arg Lys Leu Ala Tyr Arg Pro Pro Lys  
                                  325                                   330                                   335

&lt;210&gt; 1037

&lt;211&gt; 511

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1037

His Gln Leu Gln Gly Pro Leu Pro Leu Arg Ala Leu Pro Trp His Ser  
 1                                   5                                   10                                   15  
 Ser Arg Ser Arg Val Thr Cys Thr Arg Cys Phe Ser Trp Met His Pro  
                                  20                                   25                                   30  
 Ser Pro Met His Pro Leu Arg Ala Gly Ser Lys Ser Gln Gly Ser Arg  
                                  35                                   40                                   45  
 Ser Pro Ala Pro Ser Pro Met Arg Ala Ala Asn Arg Ser His Ser Ala  
                                  50                                   55                                   60  
 Gly Arg Thr Pro Gly Arg Thr Pro Gly Lys Ser Ser Ser Lys Val Gln  
 65                                   70                                   75                                   80  
 Thr Thr Pro Ser Lys Pro Gly Gly Asp Arg Tyr Ile Pro His Arg Ser  
                                  85                                   90                                   95  
 Ala Ala Gln Met Glu Val Ala Ser Phe Leu Leu Ser Lys Glu Asn Gln  
                                  100                                   105                                   110  
 Pro Glu Asn Ser Gln Thr Pro Thr Lys Lys Glu His Gln Lys Ala Trp  
                                  115                                   120                                   125

1017

Ala Leu Asn Leu Asn Gly Phe Asp Val Glu Glu Ala Lys Ile Leu Arg  
 130 135 140

Leu Ser Gly Lys Pro Gln Asn Ala Pro Glu Gly Tyr Gln Asn Arg Leu  
 145 150 155 160

Lys Val Leu Tyr Ser Gln Lys Ala Thr Pro Gly Ser Ser Arg Lys Thr  
 165 170 175

Cys Arg Tyr Ile Pro Ser Leu Pro Asp Arg Ile Leu Asp Ala Pro Glu  
 180 185 190

Ile Arg Asn Asp Tyr Tyr Leu Asn Leu Val Asp Trp Ser Ser Gly Asn  
 195 200 205

Val Leu Ala Val Ala Leu Asp Asn Ser Val Tyr Leu Trp Ser Ala Ser  
 210 215 220

Ser Gly Asp Ile Leu Gln Leu Leu Gln Met Glu Gln Pro Gly Glu Tyr  
 225 230 235 240

Ile Ser Ser Val Ala Trp Ile Lys Glu Gly Asn Tyr Leu Ala Val Gly  
 245 250 255

Thr Ser Ser Ala Glu Val Gln Leu Trp Asp Val Gln Gln Gln Lys Arg  
 260 265 270

Leu Arg Asn Met Thr Ser His Ser Ala Arg Val Gly Ser Leu Ser Trp  
 275 280 285

Asn Ser Tyr Ile Leu Ser Ser Gly Ser Arg Ser Gly His Ile His His  
 290 295 300

His Asp Val Arg Val Ala Glu His His Val Ala Thr Leu Ser Gly His  
 305 310 315 320

Ser Gln Glu Val Cys Gly Leu Arg Trp Ala Pro Asp Gly Arg His Leu  
 325 330 335

Ala Ser Gly Gly Asn Asp Asn Leu Val Asn Val Trp Pro Ser Ala Pro  
 340 345 350

Gly Glu Gly Gly Trp Val Pro Leu Gln Thr Phe Thr Gln His Gln Gly  
 355 360 365

Ala Val Lys Ala Val Ala Trp Cys Pro Trp Gln Ser Asn Val Leu Ala  
 370 375 380

Thr Gly Gly Gly Thr Ser Asp Arg His Ile Arg Ile Trp Asn Val Cys  
 385 390 395 400



1018

Ser Gly Ala Cys Leu Ser Ala Val Asp Ala His Ser Gln Val Cys Ser  
                     405                    410                    415  
 Ile Leu Trp Ser Pro His Tyr Lys Glu Leu Ile Ser Gly His Gly Phe  
                     420                    425                    430  
 Ala Gln Asn Gln Leu Val Ile Trp Lys Tyr Pro Thr Met Ala Lys Val  
                     435                    440                    445  
 Ala Glu Leu Lys Gly His Thr Ser Arg Val Leu Ser Leu Thr Met Ser  
                     450                    455                    460  
 Pro Asp Gly Ala Thr Val Ala Ser Ala Ala Asp Glu Thr Leu Arg  
                     465                    470                    475                    480  
 Leu Trp Arg Cys Phe Glu Leu Asp Pro Ala Arg Arg Arg Glu Arg Glu  
                     485                    490                    495  
 Lys Ala Ser Ala Ala Lys Ser Ser Leu Ile His Gln Gly Ile Arg  
                     500                    505                    510

&lt;210&gt; 1038

&lt;211&gt; 209

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1038

His Glu Pro Pro Ser Ala Ser Ser Val Ala Gly Asp Leu Gly Arg Gly  
   1                    5                    10                    15  
 Thr Arg Thr Glu Val Glu Ala Arg Ala Ala Arg Pro Gly Ala Glu Ser  
                     20                    25                    30  
 Ala Pro Ala Ala Ala Met Pro Asp Ser Trp Asp Lys Asp Val Tyr Pro  
                     35                    40                    45  
 Glu Pro Pro Arg Arg Thr Pro Val Gln Pro Asn Pro Ile Val Tyr Met  
                     50                    55                    60  
 Met Lys Ala Phe Asp Leu Ile Val Asp Arg Pro Val Thr Leu Val Arg  
                     65                    70                    75                    80  
 Glu Phe Ile Glu Arg Gln His Ala Lys Asn Arg Tyr Tyr Tyr Tyr His  
                     85                    90                    95  
 Arg Gln Tyr Arg Arg Val Pro Asp Ile Thr Glu Cys Lys Glu Glu Asp  
                     100                    105                    110

Ile	Met	Cys	Met	Tyr	Glu	Ala	Glu	Met	Gln	Trp	Lys	Arg	Asp	Tyr	Lys	
115						120						125				
Val	Asp	Gln	Glu	Ile	Ile	Asn	Ile	Met	Gln	Asp	Arg	Leu	Lys	Ala	Cys	
130						135						140				
Gln	Gln	Arg	Glu	Gly	Gln	Asn	Tyr	Gln	Gln	Asn	Cys	Ile	Lys	Glu	Val	
145					150					155					160	
Glu	Gln	Phe	Thr	Gln	Val	Ala	Lys	Ala	Tyr	Gln	Asp	Arg	Tyr	Gln	Asp	
165						170						175				
Leu	Gly	Ala	Tyr	Ser	Ser	Ala	Arg	Lys	Cys	Leu	Ala	Lys	Gln	Arg	Gln	
180						185						190				
Arg	Met	Leu	Gln	Glu	Arg	Lys	Ala	Ala	Lys	Glu	Ala	Ala	Ala	Ala	Thr	
195						200						205				
Ser																

```
<210> 1039
<211> 219
<212> PRT
<213> Homo sapiens
```

```
<220>  
<221> SITE  
<222> (153)  
<223> Xaa equals any of the naturally occurring L-amino acids
```

```

<400> 1039
Leu Ala Ala Pro Asp Leu Ser Lys Pro Arg Gly Tyr His Trp Asp Thr
  1                      5                      10                      15
Ser Asp Trp Met Pro Ser Val Pro Leu Pro Asp Ile Gln Glu Phe Pro
  20                      25                      30
Asn Tyr Glu Val Ile Asp Glu Gln Thr Pro Leu Tyr Ser Ala Asp Pro
  35                      40                      45
Asn Ala Ile Asp Thr Asp Tyr Tyr Pro Gly Gly Tyr Asp Ile Glu Ser
  50                      55                      60
Asp Phe Pro Pro Pro Pro Glu Asp Phe Pro Ala Ala Asp Glu Leu Pro
  65                      70                      75                      80
Pro Leu Pro Pro Glu Phe Ser Asn Gln Phe Glu Ser Ile His Pro Pro
  85                      90                      95

```

1020

Arg Asp Met Pro Ala Ala Gly Ser Leu Gly Ser Ser Ser Arg Asn Arg  
                   100                  105                  110  
 Gln Arg Phe Asn Leu Asn Gln Tyr Leu Pro Asn Phe Tyr Pro Leu Asp  
                   115                  120                  125  
 Met Ser Glu Pro Gln Thr Lys Gly Thr Gly Glu Asn Ser Thr Cys Arg  
                   130                  135                  140  
 Glu Pro His Ala Pro Tyr Pro Pro Xaa Tyr Gln Arg His Phe Glu Ala  
                   145                  150                  155                  160  
 Pro Ala Val Glu Ser Met Pro Met Ser Val Tyr Ala Ser Thr Ala Ser  
                   165                  170                  175  
 Cys Ser Asp Val Ser Ala Cys Cys Glu Val Glu Ser Glu Val Met Met  
                   180                  185                  190  
 Ser Asp Tyr Glu Ser Gly Asp Asp Gly His Phe Glu Glu Val Thr Ile  
                   195                  200                  205  
 Pro Pro Leu Asp Ser Gln Gln His Thr Glu Val  
                   210                  215

&lt;210&gt; 1040

&lt;211&gt; 178

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1040

Phe Asp Leu Pro Tyr Arg Ala Glu Phe Gly Xaa Pro Gly Pro Pro Leu  
   1                  5                  10                  15  
 Ser Ala Ala Cys Ser Trp Lys Phe Arg Leu Gly Cys Leu Leu Gly Ala  
                   20                  25                  30  
 Met Glu Ser Asp Phe Tyr Leu Arg Tyr Tyr Val Gly His Lys Gly Lys  
                   35                  40                  45  
 Phe Gly His Glu Phe Leu Glu Phe Glu Phe Arg Pro Asp Gly Lys Leu  
                   50                  55                  60  
 Arg Tyr Ala Asn Asn Ser Asn Tyr Lys Asn Asp Val Met Ile Arg Lys

1021

65						70						75						80
Glu	Ala	Tyr	Val	His	Lys	Ser	Val	Met	Glu	Glu	Leu	Lys	Arg	Ile	Ile			
				85					90				95					
Asp	Asp	Ser	Glu	Ile	Thr	Lys	Glu	Asp	Asp	Ala	Leu	Trp	Pro	Pro	Pro			
				100					105				110					
Asp	Arg	Val	Gly	Arg	Gln	Glu	Leu	Glu	Ile	Val	Ile	Gly	Asp	Glu	His			
				115					120				125					
Ile	Ser	Phe	Thr	Thr	Ser	Lys	Ile	Gly	Ser	Leu	Ile	Asp	Val	Asn	Gln			
				130					135				140					
Ser	Lys	Asp	Pro	Glu	Gly	Leu	Arg	Val	Phe	Tyr	Tyr	Leu	Val	Gln	Asp			
145				150				155				160						
Leu	Lys	Cys	Leu	Val	Phe	Ser	Leu	Ile	Gly	Leu	His	Phe	Lys	Ile	Lys			
				165					170				175					
Pro	Ile																	

```
<210> 1041
<211> 121
<212> PRT
<213> Homo sapiens
```

```

<400> 1041
Leu Val Pro Asn Ser Ala Arg Ala Gly Ala Ser Tyr Ala Ala Ala Ala
  1                      5                      10                      15

Val Thr Met Ala His Tyr Lys Ala Ala Asp Ser Lys Arg Glu Gln Phe
      20                      25                      30

Arg Arg Tyr Leu Glu Lys Ser Gly Val Leu Asp Thr Leu Thr Lys Val
      35                      40                      45

Leu Val Ala Leu Tyr Glu Glu Pro Glu Lys Pro Asn Ser Ala Leu Asp
      50                      55                      60

Phe Leu Lys His His Leu Gly Ala Ala Thr Pro Glu Asn Pro Glu Ile
  65                      70                      75                      80

Glu Leu Leu Arg Leu Glu Leu Ala Glu Met Lys Glu Lys Tyr Glu Ala
      85                      90                      95

Ile Val Glu Glu Asn Lys Lys Leu Lys Ala Lys Leu Ala Gln Tyr Glu
      100                      105                      110

```

1022

Pro Pro Gln Glu Glu Lys Arg Ala Glu  
 115 120

&lt;210&gt; 1042

&lt;211&gt; 253

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1042

Val Asp Pro Arg Val Arg Pro Arg Ser Val Asn Gly Glu Leu Gln Lys  
 1 5 10 15

Ala Ile Asp Leu Phe Thr Asp Ala Ile Lys Leu Asn Pro Arg Leu Ala  
 20 25 30

Ile Leu Tyr Ala Lys Arg Ala Ser Val Phe Val Lys Leu Gln Lys Pro  
 35 40 45

Asn Ala Ala Ile Arg Asp Cys Asp Arg Ala Ile Glu Ile Asn Pro Asp  
 50 55 60

Ser Ala Gln Pro Tyr Lys Trp Arg Gly Lys Ala His Arg Leu Leu Gly  
 65 70 75 80

His Trp Glu Glu Ala Ala His Asp Leu Ala Leu Ala Cys Lys Leu Asp  
 85 90 95

Tyr Asp Glu Asp Ala Ser Ala Met Leu Lys Glu Val Gln Pro Arg Ala  
 100 105 110

Gln Lys Ile Ala Glu His Arg Arg Lys Tyr Glu Arg Lys Arg Glu Glu  
 115 120 125

Arg Glu Ile Lys Glu Arg Ile Glu Arg Val Lys Lys Ala Arg Glu Glu  
 130 135 140

His Glu Arg Ala Gln Arg Glu Glu Glu Ala Arg Arg Gln Ser Gly Ala  
 145 150 155 160

Gln Tyr Gly Ser Phe Pro Gly Gly Phe Pro Gly Gly Met Pro Gly Asn  
 165 170 175

Phe Pro Gly Gly Met Pro Gly Met Gly Gly Gly Met Pro Gly Met Ala  
 180 185 190

Gly Met Pro Gly Leu Asn Glu Ile Leu Ser Asp Pro Glu Val Leu Ala  
 195 200 205

1023

Ala Met Gln Asp Pro Glu Val Met Val Ala Phe Gln Asp Val Ala Gln  
 210 215 220

Asn Pro Ala Asn Met Ser Lys Tyr Gln Ser Asn Pro Lys Val Met Asn  
 225 230 235 240

Leu Ile Ser Lys Leu Ser Ala Lys Phe Gly Gly Gln Ala  
 245 250

&lt;210&gt; 1043

&lt;211&gt; 343

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1043

Met Lys Thr Cys Gln Glu Glu Lys Leu Met Gly His Leu Gly Val Val  
 1 5 10 15

Leu Tyr Glu Tyr Leu Gly Glu Glu Tyr Pro Glu Val Leu Gly Ser Ile  
 20 25 30

Leu Gly Ala Leu Lys Ala Ile Val Asn Val Ile Gly Met His Lys Met  
 35 40 45

Thr Pro Pro Ile Lys Asp Leu Leu Pro Arg Leu Thr Pro Ile Leu Lys  
 50 55 60

Asn Arg His Glu Lys Val Gln Glu Asn Cys Ile Asp Leu Val Gly Arg  
 65 70 75 80

Ile Ala Asp Arg Gly Ala Glu Tyr Val Ser Ala Arg Glu Trp Met Arg  
 85 90 95

Ile Cys Phe Glu Leu Leu Glu Leu Lys Ala His Lys Lys Ala Ile  
 100 105 110

Arg Arg Ala Thr Val Asn Thr Phe Gly Tyr Ile Ala Lys Ala Ile Gly  
 115 120 125

Pro His Asp Val Leu Ala Thr Leu Leu Asn Asn Leu Lys Val Gln Glu  
 130 135 140

Arg Gln Asn Arg Val Cys Thr Thr Val Ala Ile Ala Ile Val Ala Glu  
 145 150 155 160

Thr Cys Ser Pro Phe Thr Val Leu Pro Ala Leu Met Asn Glu Tyr Arg  
 165 170 175

Val Pro Glu Leu Asn Val Gln Asn Gly Val Leu Lys Ser Leu Ser Phe

1024

180	185	190
Leu Phe Glu Tyr Ile Gly Glu Met Gly Lys Asp Tyr Ile Tyr Ala Val		
195	200	205
Thr Pro Leu Leu Glu Asp Ala Leu Met Asp Arg Asp Leu Val His Arg		
210	215	220
Gln Thr Ala Ser Ala Val Val Gln His Met Ser Leu Gly Val Tyr Gly		
225	230	235 240
Phe Gly Cys Glu Asp Ser Leu Asn His Leu Leu Asn Tyr Val Trp Pro		
245	250	255
Asn Val Phe Glu Thr Ser Pro His Val Ile Gln Ala Val Met Gly Ala		
260	265	270
Leu Glu Gly Leu Arg Val Ala Ile Gly Pro Cys Arg Met Leu Gln Tyr		
275	280	285
Cys Leu Gln Gly Leu Phe His Pro Ala Arg Lys Val Arg Asp Val Tyr		
290	295	300
Trp Lys Ile Tyr Asn Ser Ile Tyr Ile Gly Ser Gln Asp Ala Leu Ile		
305	310	315 320
Ala His Tyr Pro Arg Ile Tyr Asn Asp Asp Lys Asn Thr Tyr Ile Arg		
325	330	335
Tyr Glu Leu Asp Tyr Ile Leu		
340		

&lt;210&gt; 1044

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1044

Leu Arg Arg Pro Tyr Ala Arg Tyr Asn Gly Leu Tyr Arg Ser Gly Ile
1 5 10 15

Arg Gly Arg Xaa Asn Leu Glu Ser Thr Arg Val Arg Glu Leu Pro Gly
20 25 30

1025

Gly Ala Met Ser Cys Ile Asn Leu Pro Thr Val Leu Pro Gly Ser Pro  
           35                          40                          45  
 Ser Lys Thr Arg Gly Gln Ile Gln Val Ile Leu Gly Pro Met Phe Ser  
           50                          55                          60  
 Gly Lys Ser Thr Glu Leu Met Arg Arg Val Arg Arg Phe Gln Ile Ala  
           65                          70                          75                          80  
 Gln Tyr Lys Cys Leu Val Ile Lys Tyr Ala Lys Asp Thr Arg Tyr Ser  
                           85                          90                          95  
 Ser Ser Phe Cys Thr His Asp Arg Asn Thr Met Glu Ala Leu Pro Ala  
                           100                          105                          110  
 Cys Leu Leu Arg Asp Val Ala Gln Glu Ala Leu Gly Val Ala Val Ile  
           115                          120                          125  
 Gly Ile Asp Glu Gly Gln Phe Phe Pro Asp Ile Val Glu Phe Cys Glu  
           130                          135                          140  
 Ala Met Ala Asn Ala Gly Lys Thr Val Ile Val Ala Ala Leu Asp Gly  
           145                          150                          155                          160  
 Thr Phe Gln Arg Lys Pro Phe Gly Ala Ile Leu Asn Leu Val Pro Leu  
                           165                          170                          175  
 Ala Glu Ser Val Val Lys Leu Thr Ala Val Cys Met Glu Cys Phe Arg  
                           180                          185                          190  
 Glu Ala Ala Tyr Thr Lys Arg Leu Gly Thr Glu Lys Glu Val Glu Val  
           195                          200                          205  
 Ile Gly Gly Ala Asp Lys Tyr His Ser Val Cys Arg Leu Cys Tyr Phe  
           210                          215                          220  
 Lys Lys Ala Ser Gly Gln Pro Ala Gly Pro Asp Asn Lys Glu Asn Cys  
           225                          230                          235                          240  
 Pro Val Pro Gly Lys Pro Gly Glu Ala Val Ala Ala Arg Lys Leu Phe  
                           245                          250                          255  
 Ala Pro Gln Gln Ile Leu Gln Cys Ser Pro Ala Asn  
           260                          265

&lt;210&gt; 1045

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens



1026

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (128)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1045

```

Pro Gly Gln Ser Arg Trp Gln Gly Pro Pro Leu Pro Leu Cys Gln Ala
 1               5               10               15

Gly Ser Ala Lys Ser Gly Glu Pro Gly Ala Gly Gly Lys Ala Gly Asp
                20               25               30

Ser Pro Ala Leu Pro Pro Pro Pro Leu Gly Ala Gln Gln Leu Leu Arg
                35               40               45

Lys Val Trp His Pro Trp Arg Gly Gly Ala Pro Gly Trp Ala Gly Ser
 50               55               60

Arg Trp Pro Gly Ala Trp Arg Cys Ala Ala Gly Ala Cys Met Ala Pro
 65               70               75               80

Arg Gly Thr Gln Ala Glu Glu Ser Pro Phe Val Gly Asn Pro Gly Asn
                85               90               95

Ile Thr Gly Ala Arg Gly Leu Thr Gly Thr Leu Arg Cys Gln Leu Gln
                100              105              110

Val Gln Gly Glu Pro Pro Glu Val His Trp Leu Arg Asp Gly Gln Xaa
                115              120              125

Leu Glu Leu Ala Asp Ser Thr Gln Thr Gln Val
 130              135

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&lt;210&gt; 1046

&lt;211&gt; 416

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1046

```

Ser Pro Ser Glu Arg Leu Gln Arg Gly Arg Glu Glu Gln Pro Ala Gly
 1               5               10               15

Gly Gly Gly Glu Ser Val Ser Ser Trp Glu Glu Gln Asn Arg Gly Gly
                20               25               30

Ala Pro Ala Gly Ala Gly Gly Gly Pro Thr Met Ala Ile Arg Lys Lys
                35               40               45

```

1027

Ser	Thr	Lys	Ser	Pro	Pro	Val	Leu	Ser	His	Glu	Phe	Val	Leu	Gln	Asn	50	55	60	
His	Ala	Asp	Ile	Val	Ser	Cys	Val	Ala	Met	Val	Phe	Leu	Leu	Gly	Leu	65	70	75	80
Met	Phe	Glu	Ile	Thr	Ala	Lys	Ala	Ser	Ile	Ile	Phe	Val	Thr	Leu	Gln	85	90	95	
Tyr	Asn	Val	Thr	Leu	Pro	Ala	Thr	Glu	Glu	Gln	Ala	Thr	Glu	Ser	Val	100	105	110	
Ser	Leu	Tyr	Tyr	Tyr	Gly	Ile	Lys	Asp	Leu	Ala	Thr	Val	Phe	Phe	Tyr	115	120	125	
Met	Leu	Val	Ala	Ile	Ile	Ile	His	Ala	Val	Ile	Gln	Glu	Tyr	Met	Leu	130	135	140	
Asp	Lys	Ile	Asn	Arg	Arg	Met	His	Phe	Ser	Lys	Thr	Lys	His	Ser	Lys	145	150	155	160
Phe	Asn	Glu	Ser	Gly	Gln	Leu	Ser	Ala	Phe	Tyr	Leu	Phe	Ala	Cys	Val	165	170	175	
Trp	Gly	Thr	Phe	Ile	Leu	Ile	Ser	Glu	Asn	Tyr	Ile	Ser	Asp	Pro	Thr	180	185	190	
Ile	Leu	Trp	Arg	Ala	Tyr	Pro	His	Asn	Leu	Met	Thr	Phe	Gln	Met	Lys	195	200	205	
Phe	Phe	Tyr	Ile	Ser	Gln	Leu	Ala	Tyr	Trp	Leu	His	Ala	Phe	Pro	Glu	210	215	220	
Leu	Tyr	Phe	Gln	Lys	Thr	Lys	Lys	Glu	Asp	Ile	Pro	Arg	Gln	Leu	Val	225	230	235	240
Tyr	Ile	Gly	Leu	Tyr	Leu	Phe	His	Ile	Ala	Gly	Ala	Tyr	Leu	Leu	Asn	245	250	255	
Leu	Asn	His	Leu	Gly	Leu	Val	Leu	Leu	Val	Leu	His	Tyr	Phe	Val	Glu	260	265	270	
Phe	Leu	Phe	His	Ile	Ser	Arg	Leu	Phe	Tyr	Phe	Ser	Asn	Glu	Lys	Tyr	275	280	285	
Gln	Lys	Gly	Phe	Ser	Leu	Trp	Ala	Val	Leu	Phe	Val	Leu	Gly	Arg	Leu	290	295	300	
Leu	Thr	Leu	Ile	Leu	Ser	Val	Leu	Thr	Val	Gly	Phe	Gly	Leu	Ala	Arg	305	310	315	320

1028

Ala Glu Asn Gln Lys Leu Asp Phe Ser Thr Gly Asn Phe Asn Val Leu  
                                   325                                  330                                  335

Ala Val Arg Ile Ala Val Leu Ala Ser Ile Cys Val Thr Gln Ala Phe  
                                   340                                  345                                  350

Met Met Trp Lys Phe Ile Asn Phe Gln Leu Arg Arg Trp Arg Glu His  
                                   355                                  360                                  365

Ser Ala Phe Gln Ala Pro Ala Val Lys Lys Lys Pro Thr Val Thr Lys  
                                   370                                  375                                  380

Gly Arg Ser Ser Lys Lys Gly Thr Glu Asn Gly Val Asn Gly Thr Leu  
                                   385                                  390                                  395                                  400

Thr Ser Asn Val Ala Asp Ser Pro Arg Asn Lys Lys Glu Lys Ser Ser  
                                   405                                  410                                  415

&lt;210&gt; 1047

&lt;211&gt; 466

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1047

Pro Ala Ser Ser Gly Leu Leu Pro Leu Ser Arg Ser Asn Leu Tyr Ser  
   1                                  5                                  10                                  15

Gly Arg Thr Gly Ile Pro Arg Ala Pro Pro Ala Leu Ala Ala Leu Ala  
                                   20                                  25                                  30

Thr Ala Pro Gly Arg Arg Ala Pro Val His Thr Gly Ser Leu Leu Gly  
                                   35                                  40                                  45

Thr Asn Ser Ser Thr Met Gly Leu Ala Trp Gly Leu Gly Val Leu Phe  
                                   50                                  55                                  60

Leu Met His Val Cys Gly Thr Asn Arg Ile Pro Glu Ser Gly Gly Asp  
                                   65                                  70                                  75                                  80

Asn Ser Val Phe Asp Ile Phe Glu Leu Thr Gly Ala Ala Arg Lys Gly  
                                   85                                  90                                  95

Ser Gly Arg Arg Leu Val Lys Gly Pro Asp Pro Ser Ser Pro Ala Phe  
                                   100                                  105                                  110

Arg Ile Glu Asp Ala Asn Leu Ile Pro Pro Val Pro Asp Asp Lys Phe

1029

115	120	125
Gln Asp Leu Val Asp Ala Val Arg Ala Glu Lys Gly Phe Leu Leu Leu		
130	135	140
Ala Ser Leu Arg Gln Met Lys Lys Thr Arg Gly Thr Leu Leu Ala Leu		
145	150	155
Glu Arg Lys Asp His Ser Gly Gln Val Phe Ser Val Val Ser Asn Gly		
165	170	175
Lys Ala Gly Thr Leu Asp Leu Ser Leu Thr Val Gln Gly Lys Gln His		
180	185	190
Val Val Ser Val Glu Glu Ala Leu Leu Ala Thr Gly Gln Trp Lys Ser		
195	200	205
Ile Thr Leu Phe Val Gln Glu Asp Arg Ala Gln Leu Tyr Ile Asp Cys		
210	215	220
Glu Lys Met Glu Asn Ala Glu Leu Asp Val Pro Ile Gln Ser Val Phe		
225	230	235
Thr Arg Asp Leu Ala Ser Ile Ala Arg Leu Arg Ile Ala Lys Gly Gly		
245	250	255
Val Asn Asp Asn Phe Gln Gly Val Leu Gln Asn Val Arg Phe Val Phe		
260	265	270
Gly Thr Thr Pro Glu Asp Ile Leu Arg Asn Lys Gly Cys Ser Ser Ser		
275	280	285
Thr Ser Val Leu Leu Thr Leu Asp Asn Asn Val Val Asn Gly Ser Ser		
290	295	300
Pro Ala Ile Arg Thr Asn Tyr Ile Gly His Lys Thr Lys Asp Leu Gln		
305	310	315
Ala Ile Cys Gly Ile Ser Cys Asp Glu Leu Ser Ser Met Val Leu Glu		
325	330	335
Leu Arg Gly Leu Arg Thr Ile Val Thr Thr Leu Gln Asp Ser Ile Arg		
340	345	350
Lys Val Thr Glu Glu Asn Lys Glu Leu Ala Asn Glu Leu Arg Arg Pro		
355	360	365
Pro Leu Cys Tyr His Asn Gly Val Gln Tyr Arg Asn Asn Glu Glu Trp		
370	375	380
Thr Val Asp Ser Cys Thr Glu Cys His Cys Gln Asn Ser Val Thr Ile		

1030

385                      390                      395                      400  
 Cys Lys Lys Val Ser Cys Pro Ile Met Pro Cys Ser Asn Ala Thr Val  
                                  405                      410                      415  
 Pro Asp Gly Glu Cys Cys Pro Arg Cys Trp Pro Ser Asp Ser Ala Asp  
                                  420                      425                      430  
 Asp Gly Trp Ser Pro Trp Ser Glu Trp Thr Ser Cys Ser Thr Ser Cys  
                                  435                      440                      445  
 Gly Asn Gly Ile Gln Gln Arg Gly Arg Ser Cys Asp Ser Ala Gln Gln  
                                  450                      455                      460  
 Pro Met  
 465

<210> 1048  
 <211> 217  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (122)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (186)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (200)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1048  
 Asp Pro Arg Val Arg Gln Ser His Ile Ser Asp Thr Ser Val Val Val  
   1                                  5                                  10                                  15  
 Lys Leu Asp Asn Ser Arg Asp Leu Asn Met Asp Cys Ile Ile Ala Glu  
                                   20                                  25                                  30  
 Ile Lys Ala Gln Tyr Asp Asp Ile Val Thr Arg Ser Arg Ala Glu Ala  
                                   35                                  40                                  45  
 Glu Ser Trp Tyr Arg Ser Lys Cys Glu Glu Met Lys Ala Thr Val Ile  
                                   50                                  55                                  60

1031

Arg His Gly Glu Thr Leu Arg Arg Thr Lys Glu Glu Ile Asn Glu Leu  
65 70 75 80

Asn Arg Met Ile Gln Arg Leu Thr Ala Glu Val Glu Asn Ala Lys Cys  
85 90 95

Gln Asn Ser Lys Leu Glu Ala Ala Val Ala Gln Ser Glu Gln Gln Gly  
100 105 110

Glu Ala Ala Leu Ser Asp Ala Arg Cys Xaa Leu Ala Glu Leu Glu Gly  
115 120 125

Ala Leu Gln Lys Ala Lys Gln Asp Met Ala Cys Leu Ile Arg Glu Tyr  
130 135 140

Gln Glu Val Met Asn Ser Lys Leu Gly Leu Asp Ile Glu Ile Ala Thr  
145 150 155 160

Tyr Arg Arg Leu Leu Glu Gly Glu Glu Gln Arg Leu Cys Glu Gly Ile  
165 170 175

Gly Ala Val Asn Val Cys Val Ser Ser Xaa Arg Gly Gly Val Val Cys  
180 185 190

Gly Asp Leu Cys Val Ser Gly Xaa Arg Pro Val Thr Ala Val Ser Ala  
195 200 205

Ala Leu Arg Ala Thr Gly Thr Trp Arg  
210 215

&lt;210&gt; 1049

&lt;211&gt; 406

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1049

Gly Ser Ala Ala Ala Arg Tyr Leu Ser Ala Thr Trp Arg Asn Trp Ile  
1 5 10 15

Ser Leu Pro Pro Ala Gly Leu Pro Ala Thr Ala Gly Leu Arg His Ser  
20 25 30

Gly Ser Leu Met Ala Ala Thr Cys Glu Ile Ser Asn Ile Phe Ser Asn  
35 40 45

Tyr Phe Ser Ala Met Tyr Ser Ser Glu Asp Ser Thr Leu Ala Ser Val  
50 55 60

1032

Pro Pro Ala Ala Thr Phe Gly Ala Asp Asp Leu Val Leu Thr Leu Ser  
 65 70 75 80  
 Asn Pro Gln Met Ser Leu Glu Gly Thr Glu Lys Ala Ser Trp Leu Gly  
 85 90 95  
 Glu Gln Pro Gln Phe Trp Ser Lys Thr Gln Val Leu Asp Trp Ile Ser  
 100 105 110  
 Tyr Gln Val Glu Lys Asn Lys Tyr Asp Ala Ser Ala Ile Asp Phe Ser  
 115 120 125  
 Arg Cys Asp Met Asp Gly Ala Thr Leu Cys Asn Cys Ala Leu Glu Glu  
 130 135 140  
 Leu Arg Leu Val Phe Gly Pro Leu Gly Asp Gln Leu His Ala Gln Leu  
 145 150 155 160  
 Arg Asp Leu Thr Ser Ser Ser Ser Asp Glu Leu Ser Trp Ile Ile Glu  
 165 170 175  
 Leu Leu Glu Lys Asp Gly Met Ala Phe Gln Glu Ala Leu Asp Pro Gly  
 180 185 190  
 Pro Phe Asp Gln Gly Ser Pro Phe Ala Gln Glu Leu Leu Asp Asp Gly  
 195 200 205  
 Gln Gln Ala Ser Pro Tyr His Pro Gly Ser Cys Gly Ala Gly Ala Pro  
 210 215 220  
 Ser Pro Gly Ser Ser Asp Val Ser Thr Ala Gly Thr Gly Ala Ser Arg  
 225 230 235 240  
 Ser Ser His Ser Ser Asp Ser Gly Gly Ser Asp Val Asp Leu Asp Pro  
 245 250 255  
 Thr Asp Gly Lys Leu Phe Pro Ser Asp Gly Phe Arg Asp Cys Lys Lys  
 260 265 270  
 Gly Asp Pro Lys His Gly Lys Arg Lys Arg Gly Arg Pro Arg Lys Leu  
 275 280 285  
 Ser Lys Glu Tyr Trp Asp Cys Leu Glu Gly Lys Lys Ser Lys His Ala  
 290 295 300  
 Pro Arg Gly Thr His Leu Trp Glu Phe Ile Arg Asp Ile Leu Ile His  
 305 310 315 320  
 Pro Glu Leu Asn Glu Gly Leu Met Lys Trp Glu Asn Arg His Glu Gly  
 325 330 335

1033

Val Phe Lys Phe Leu Arg Ser Glu Ala Val Ala Gln Leu Trp Gly Gln  
                   340                  345                  350

Lys Lys Lys Asn Ser Asn Met Thr Tyr Glu Lys Leu Ser Arg Ala Met  
                   355                  360                  365

Arg Tyr Tyr Tyr Lys Arg Glu Ile Leu Glu Arg Val Asp Gly Arg Arg  
                   370                  375                  380

Leu Val Tyr Lys Phe Gly Lys Asn Ser Ser Gly Trp Lys Glu Glu Glu  
 385                  390                  395                  400

Val Leu Gln Ser Arg Asn  
                   405

&lt;210&gt; 1050

&lt;211&gt; 251

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (86)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1050

Arg Pro Ala Leu Asp Thr Cys Cys Pro Phe Pro Ala Arg Ile Leu Gly  
   1                  5                  10                  15

Ser Phe Pro Leu Ser Gln His Leu Gly Pro Ala Phe Asp Thr Thr Pro  
                   20                  25                  30

Arg Leu Pro Thr Leu Arg Ala Trp Ser Leu Pro Gln Gly Pro Leu Ser  
                   35                  40                  45

Trp Ala Met Ala Xaa Lys Gly Val Leu Gly Pro Gly Gln Leu Gly Ala  
   50                  55                  60

Val Ala Ile Leu Leu Tyr Leu Gly Leu Leu Arg Ser Gly Thr Gly Ala  
   65                  70                  75                  80

Glu Gly Ala Glu Ala Xaa Cys Gly Val Ala Pro Gln Ala Arg Ile Thr  
                   85                  90                  95



1034

Gly Gly Ser Ser Ala Val Ala Gly Gln Trp Pro Trp Gln Val Ser Ile  
                   100                  105                  110  
 Thr Tyr Glu Gly Val His Val Cys Gly Gly Ser Leu Val Ser Glu Gln  
                   115                  120                  125  
 Trp Val Leu Ser Ala Ala His Cys Phe Pro Ser Glu His His Lys Glu  
                   130                  135                  140  
 Ala Tyr Glu Val Lys Leu Gly Ala His Gln Leu Asp Ser Tyr Ser Glu  
 145                  150                  155                  160  
 Asp Ala Lys Val Ser Thr Leu Lys Asp Ile Ile Pro His Pro Ser Tyr  
                   165                  170                  175  
 Leu Gln Glu Gly Ser Gln Gly Asp Ile Ala Leu Leu Gln Leu Ser Arg  
                   180                  185                  190  
 Pro Ile Thr Phe Ser Arg Tyr Ile Arg Pro Ile Cys Leu Pro Ala Ala  
                   195                  200                  205  
 Asn Ala Ser Phe Pro Asn Gly Leu His Cys Thr Val Thr Gly Trp Gly  
                   210                  215                  220  
 His Val Ala Pro Ser Val Ser Leu Leu Thr Pro Lys Pro Leu Gln Gln  
 225                  230                  235                  240  
 Leu Glu Val Pro Leu Ile Ser Arg Glu Thr Trp  
                   245                  250

&lt;210&gt; 1051

&lt;211&gt; 171

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1051

His Tyr Arg Arg Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Arg Gly Arg  
   1                  5                  10                  15  
 Val Asp Ile Arg Arg Arg Ser Ser Arg Arg Pro Arg Glu Pro Pro Gly  
                   20                  25                  30  
 Pro Ser Arg Arg Arg Arg Arg Arg Arg Pro Asp Pro Arg Thr Met Pro  
                   35                  40                  45  
 Ser Glu Lys Thr Phe Lys Gln Arg Arg Thr Phe Glu Gln Arg Val Glu  
                   50                  55                  60  
 Asp Val Arg Leu Ile Arg Glu Gln His Pro Thr Lys Ile Pro Val Ile

1035

65		70		75		80									
Ile	Glu	Arg	Tyr	Lys	Gly	Glu	Lys	Gln	Leu	Pro	Val	Leu	Asp	Lys	Thr
				85					90					95	
Lys	Phe	Leu	Val	Pro	Asp	His	Val	Asn	Met	Ser	Glu	Leu	Ile	Lys	Ile
		100						105					110		
Ile	Arg	Arg	Arg	Leu	Gln	Leu	Asn	Ala	Asn	Gln	Ala	Phe	Phe	Leu	Leu
		115					120					125			
Val	Asn	Gly	His	Ser	Met	Val	Ser	Val	Ser	Thr	Pro	Ile	Ser	Glu	Val
	130					135					140				
Tyr	Glu	Ser	Glu	Lys	Asp	Glu	Asp	Gly	Phe	Leu	Tyr	Met	Val	Tyr	Ala
145					150					155					160
Ser	Gln	Glu	Thr	Phe	Gly	Met	Lys	Leu	Ser	Val					
				165					170						

&lt;210&gt; 1052

&lt;211&gt; 189

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1052

Gly	Gly	Pro	Thr	Cys	Ser	Ala	Arg	Cys	Glu	Pro	Val	Arg	Pro	Pro	Pro
1				5					10					15	
Ala	Pro	Glu	Gln	Pro	Ala	Ser	Leu	His	Arg	Leu	Leu	Ser	Val	Leu	Ser
			20					25					30		
Pro	Arg	Ala	Ala	Ile	Ala	Val	Met	Leu	Gly	Ala	Ala	Leu	Arg	Arg	Cys
		35					40					45			
Ala	Val	Ala	Ala	Thr	Thr	Arg	Ala	Asp	Pro	Arg	Gly	Leu	Leu	His	Ser
	50					55					60				
Ala	Arg	Thr	Pro	Gly	Pro	Ala	Val	Ala	Ile	Gln	Ser	Val	Arg	Cys	Tyr
65					70					75					80
Ser	His	Gly	Ser	Gln	Glu	Thr	Asp	Glu	Glu	Phe	Asp	Ala	Arg	Trp	Val
				85					90					95	
Thr	Tyr	Phe	Asn	Lys	Pro	Asp	Ile	Asp	Ala	Trp	Glu	Leu	Arg	Lys	Gly
			100					105					110		
Ile	Asn	Thr	Leu	Val	Thr	Tyr	Asp	Met	Val	Pro	Glu	Pro	Lys	Ile	Ile
		115					120					125			

1036

Asp Ala Ala Leu Arg Ala Cys Arg Arg Leu Asn Asp Phe Ala Ser Thr  
 130 135 140

Val Arg Ile Leu Glu Val Val Lys Asp Lys Ala Gly Pro His Lys Glu  
 145 150 155 160

Ile Tyr Pro Tyr Val Ile Gln Glu Leu Arg Pro Thr Leu Asn Glu Leu  
 165 170 175

Gly Ile Ser Thr Pro Glu Glu Leu Gly Leu Asp Lys Val  
 180 185

&lt;210&gt; 1053

&lt;211&gt; 315

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1053

Arg His Ser Ala Ser Pro Arg Cys Arg Leu Pro Pro Thr Glu Pro Val  
 1 5 10 15

Ser Gly Leu Arg Ala Ser Gly Glu Met Leu Leu Pro Leu Leu Leu Leu  
 20 25 30

Leu Pro Met Cys Trp Ala Val Glu Val Lys Arg Pro Arg Gly Val Ser  
 35 40 45

Leu Thr Asn His His Phe Tyr Asp Glu Ser Lys Pro Phe Thr Cys Leu  
 50 55 60

Asp Gly Ser Ala Thr Ile Pro Phe Asp Gln Val Asn Asp Asp Tyr Cys  
 65 70 75 80

Asp Cys Lys Asp Gly Ser Asp Glu Pro Gly Thr Ala Ala Cys Pro Asn  
 85 90 95

Gly Ser Phe His Cys Thr Asn Thr Gly Tyr Lys Pro Leu Tyr Ile Pro  
 100 105 110

Ser Asn Arg Val Asn Asp Gly Val Cys Asp Cys Cys Asp Gly Thr Asp  
 115 120 125

Glu Tyr Asn Ser Gly Val Ile Cys Glu Asn Thr Cys Lys Glu Lys Gly  
 130 135 140

Arg Lys Glu Arg Glu Ser Leu Gln Gln Met Ala Glu Val Thr Arg Glu  
 145 150 155 160

1037

Gly Phe Arg Leu Lys Lys Ile Leu Ile Glu Asp Trp Lys Lys Ala Arg  
                     165                    170                    175  
 Glu Glu Lys Gln Lys Lys Leu Ile Glu Leu Gln Ala Gly Lys Lys Ser  
                     180                    185                    190  
 Leu Glu Asp Gln Val Glu Met Leu Arg Thr Val Lys Glu Glu Ala Glu  
                     195                    200                    205  
 Lys Pro Glu Arg Glu Ala Lys Glu Gln His Gln Lys Leu Trp Glu Glu  
                     210                    215                    220  
 Gln Leu Ala Ala Ala Lys Ala Gln Gln Glu Gln Glu Leu Ala Ala Asp  
                     225                    230                    235                    240  
 Ala Phe Lys Glu Leu Asp Asp Asp Met Asp Gly Thr Val Ser Val Thr  
                     245                    250                    255  
 Glu Leu Gln Thr His Pro Glu Leu Asp Thr Asp Gly Asp Gly Ala Leu  
                     260                    265                    270  
 Ser Glu Ala Glu Ala Gln Ala Leu Leu Ser Gly Asp Thr Gln Thr Asp  
                     275                    280                    285  
 Ala Thr Ser Phe Tyr Asp Arg Val Trp Gly Pro Gly Gly Ala Gly Pro  
                     290                    295                    300  
 His Ser Gln Ala Pro Thr Ala Phe Lys Asp Gly  
                     305                    310                    315

&lt;210&gt; 1054

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1054

Val Trp Lys Val Ile Val Trp Ser His Ser Ser Leu Ile Thr Leu Leu  
           1                    5                    10                    15  
 Gly Ile Leu Glu Glu Lys Gly Ser Lys Thr Tyr Thr His Thr Pro Thr  
                     20                    25                    30  
 Gln Ser Asn Ser Val Phe Lys Gln Ile Pro Arg Ile Leu Gly Pro Gly  
                     35                    40                    45  
 Leu Asn Lys Ala Gly Lys Phe Pro Ser Leu Leu Thr His Asn Glu Asn  
                     50                    55                    60  
 Met Val Ala Lys Val Asp Glu Val Lys Ser Thr Ile Lys Phe Gln Met

1038

[illegible]

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<210> 1055
<211> 243
<212> PRT
<213> Homo sapiens
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<400> 1055
Gly Thr Arg Glu Glu Ala Gly Val Asp Leu Val Ser Pro Thr Pro Leu
  1          5          10          15
Thr Pro Pro Asp Pro Gly Ala Ala Ser Ala Thr Ala Thr Ala Pro Ala
          20          25          30
Pro Ala Ala Ala Arg Arg Gly Glu Ala Met Ala Lys Val Ser Val Leu
          35          40          45
Asn Val Ala Val Leu Glu Asn Pro Ser Pro Phe His Ser Pro Phe Arg
          50          55          60
Phe Glu Ile Ser Phe Glu Cys Ser Glu Ala Leu Ala Asp Asp Leu Glu
  65          70          75          80
Trp Lys Ile Ile Tyr Val Gly Ser Ala Glu Ser Glu Glu Phe Asp Gln
          85          90          95
Ile Leu Asp Ser Val Leu Val Gly Pro Val Pro Ala Gly Arg His Met
          100          105          110
Phe Val Phe Gln Ala Asp Ala Pro Asn Pro Ser Leu Ile Pro Glu Thr
          115          120          125
Asp Ala Val Gly Val Thr Val Val Leu Ile Thr Cys Thr Tyr His Gly
          130          135          140
Gln Glu Phe Ile Arg Val Gly Tyr Tyr Val Asn Asn Glu Tyr Leu Asn
  145          150          155          160

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1039

Pro Glu Leu Arg Glu Asn Pro Pro Met Lys Pro Asp Phe Ser Gln Leu  
                     165                    170                    175  
 Gln Arg Asn Ile Leu Ala Ser Asn Pro Arg Val Thr Arg Phe His Ile  
                     180                    185                    190  
 Asn Trp Asp Asn Asn Met Asp Arg Leu Glu Ala Ile Glu Thr Gln Asp  
                     195                    200                    205  
 Pro Ser Leu Gly Cys Gly Leu Pro Leu Asn Cys Thr Pro Ile Lys Gly  
                     210                    215                    220  
 Leu Gly Leu Pro Gly Cys Ile Pro Gly Leu Leu Pro Glu Asn Ser Met  
                     225                    230                    235                    240  
 Asp Cys Ile

&lt;210&gt; 1056

&lt;211&gt; 211

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1056

His Glu Pro Arg Arg Leu Leu Xaa Asp Ala Glu Gly Pro Glu Glu Thr  
   1                    5                    10                    15

Val Arg Leu Trp Pro Ala Ala Arg Ala Ala Met Asp Ala Ala Glu Val  
                     20                    25                    30

Glu Phe Leu Ala Glu Lys Glu Leu Val Thr Ile Ile Pro Asn Phe Ser  
                     35                    40                    45

Leu Asp Lys Ile Tyr Leu Ile Gly Gly Asp Leu Gly Pro Phe Asn Pro  
                     50                    55                    60

Gly Leu Pro Val Glu Val Pro Leu Trp Leu Ala Ile Asn Leu Lys Gln  
                     65                    70                    75                    80

Arg Gln Lys Cys Arg Leu Leu Pro Pro Glu Trp Met Asp Val Glu Lys  
                     85                    90                    95

Leu Glu Lys Met Arg Asp His Glu Arg Lys Glu Glu Thr Phe Thr Pro

1040

100	105	110
Met Pro Ser Pro Tyr Tyr Met Glu Leu Thr Lys Leu Leu Leu Asn His		
115	120	125
Ala Ser Asp Asn Ile Pro Lys Ala Asp Glu Ile Arg Thr Leu Val Lys		
130	135	140
Asp Met Trp Asp Thr Arg Ile Ala Lys Leu Arg Val Ser Ala Asp Ser		
145	150	155
Phe Val Arg Gln Gln Glu Ala His Ala Lys Leu Asp Asn Leu Thr Leu		
165	170	175
Met Glu Ile Asn Thr Ser Gly Thr Phe Leu Thr Gln Ala Leu Asn His		
180	185	190
Met Tyr Lys Leu Arg Thr Asn Leu Gln Pro Leu Glu Ser Thr Gln Ser		
195	200	205
Gln Asp Phe		
210		

&lt;210&gt; 1057

&lt;211&gt; 407

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (343)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1057

Val Ile Leu Gly Ala Gly Leu Arg Asp Lys Asp Met Trp Ile Pro Val		
1	5	10
Val Gly Leu Pro Arg Arg Leu Arg Leu Ser Ala Leu Ala Gly Ala Gly		
20	25	30
Arg Phe Cys Ile Leu Gly Ser Glu Ala Ala Thr Arg Lys His Leu Pro		
35	40	45
Ala Arg Asn His Cys Gly Leu Ser Asp Ser Ser Pro Gln Leu Trp Pro		
50	55	60
Glu Pro Asp Phe Arg Asn Pro Pro Arg Lys Ala Ser Lys Ala Ser Leu		
65	70	75
		80

1041

Asp	Phe	Lys	Arg	Tyr	Val	Thr	Asp	Arg	Arg	Leu	Ala	Glu	Thr	Leu	Ala	85	90	95
Gln	Ile	Tyr	Leu	Gly	Lys	Pro	Ser	Arg	Pro	Pro	His	Leu	Leu	Leu	Glu	100	105	110
Cys	Asn	Pro	Gly	Pro	Gly	Ile	Leu	Thr	Gln	Ala	Leu	Leu	Glu	Ala	Gly	115	120	125
Ala	Lys	Val	Val	Ala	Leu	Glu	Ser	Asp	Lys	Thr	Phe	Ile	Pro	His	Leu	130	135	140
Glu	Ser	Leu	Gly	Lys	Asn	Leu	Asp	Gly	Lys	Leu	Arg	Val	Ile	His	Cys	145	150	155
Asp	Phe	Phe	Lys	Leu	Asp	Pro	Arg	Ser	Gly	Gly	Val	Ile	Lys	Pro	Pro	165	170	175
Ala	Met	Ser	Ser	Arg	Gly	Leu	Phe	Lys	Asn	Leu	Gly	Ile	Glu	Ala	Val	180	185	190
Pro	Trp	Thr	Ala	Asp	Ile	Pro	Leu	Lys	Val	Val	Gly	Met	Phe	Pro	Ser	195	200	205
Arg	Gly	Glu	Lys	Arg	Ala	Leu	Trp	Lys	Leu	Ala	Tyr	Asp	Leu	Tyr	Ser	210	215	220
Cys	Thr	Ser	Ile	Tyr	Lys	Phe	Gly	Arg	Ile	Glu	Val	Asn	Met	Phe	Ile	225	230	235
Gly	Glu	Lys	Glu	Phe	Gln	Lys	Leu	Met	Ala	Asp	Pro	Gly	Asn	Pro	Asp	245	250	255
Leu	Tyr	His	Val	Leu	Ser	Val	Ile	Trp	Gln	Leu	Ala	Cys	Glu	Ile	Lys	260	265	270
Val	Leu	His	Met	Glu	Pro	Trp	Ser	Ser	Phe	Asp	Ile	Tyr	Thr	Arg	Lys	275	280	285
Gly	Pro	Leu	Glu	Asn	Pro	Lys	Arg	Arg	Glu	Leu	Leu	Asp	Gln	Leu	Gln	290	295	300
Gln	Lys	Leu	Tyr	Leu	Ile	Gln	Met	Ile	Pro	Arg	Gln	Asn	Leu	Phe	Thr	305	310	315
Lys	Asn	Leu	Thr	Pro	Met	Asn	Tyr	Asn	Ile	Phe	Phe	His	Leu	Leu	Lys	325	330	335
His	Cys	Phe	Gly	Arg	Arg	Xaa	Ala	Thr	Val	Ile	Asp	His	Leu	Arg	Ser	340	345	350



1042

Leu Thr Pro Leu Asp Ala Arg Asp Ile Leu Met Gln Ile Gly Lys Gln  
 355 360 365

Glu Asp Glu Lys Val Val Asn Met His Pro Gln Asp Phe Lys Thr Leu  
 370 375 380

Phe Glu Thr Ile Glu Arg Ser Lys Asp Cys Ala Tyr Lys Trp Leu Tyr  
 385 390 395 400

Asp Glu Thr Leu Glu Asp Arg  
 405

&lt;210&gt; 1058

&lt;211&gt; 89

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1058

Ser Ser Trp Val Gly Gly Ser Leu Arg Gln Ala Ala Thr Leu Glu Gly  
 1 5 10 15

Glu Gln Gly Ser Ala Val Ser Ala Ala Ser His Ala Arg Ser Asp Leu  
 20 25 30

Ser Leu Gly Thr Pro Gln Glu Pro Glu Asp Ser Ser Gly Gln Cys Arg  
 35 40 45

Trp Gly Val Gly Gly Glu Ser Gly Arg Glu Ala Leu Arg Ala Pro Ser  
 50 55 60

Pro Thr Thr Asn Leu Ala Leu Val Val Ile Phe Arg Gln Asn Phe Val  
 65 70 75 80

Val Phe Phe Pro Phe Tyr Asp Gly Phe  
 85

&lt;210&gt; 1059

&lt;211&gt; 457

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1059

Gly Thr Arg Pro Ser Ser Cys Ser Gln Thr Glu Ala Gln Pro Pro Ser  
 1 5 10 15

Pro Val Ser Ile Thr Ser Ala Ala Ser Met Ser Asp Lys Leu Pro Tyr  
 20 25 30

1043

Lys	Val	Ala	Asp	Ile	Gly	Leu	Ala	Ala	Trp	Gly	Arg	Lys	Ala	Leu	Asp
35						40						45			
Ile	Ala	Glu	Asn	Glu	Met	Pro	Gly	Leu	Met	Arg	Met	Arg	Glu	Arg	Tyr
50						55						60			
Ser	Ala	Ser	Lys	Pro	Leu	Lys	Gly	Ala	Arg	Ile	Ala	Gly	Cys	Leu	His
65						70						75			
Met	Thr	Val	Glu	Thr	Ala	Val	Leu	Ile	Glu	Thr	Leu	Val	Thr	Leu	Gly
			85						90			95			
Ala	Glu	Val	Gln	Trp	Ser	Ser	Cys	Asn	Ile	Phe	Ser	Thr	Gln	Asp	His
			100						105			110			
Ala	Ala	Ala	Ala	Ile	Ala	Lys	Ala	Gly	Ile	Pro	Val	Tyr	Ala	Trp	Lys
115						120						125			
Gly	Glu	Thr	Asp	Glu	Glu	Tyr	Leu	Trp	Cys	Ile	Glu	Gln	Thr	Leu	Tyr
130						135						140			
Phe	Lys	Asp	Gly	Pro	Leu	Asn	Met	Ile	Leu	Asp	Asp	Gly	Gly	Asp	Leu
145						150						155			
Thr	Asn	Leu	Ile	His	Thr	Lys	Tyr	Pro	Gln	Leu	Leu	Pro	Gly	Ile	Arg
			165						170			175			
Gly	Ile	Ser	Glu	Glu	Thr	Thr	Thr	Gly	Val	His	Asn	Leu	Tyr	Lys	Met
			180						185			190			
Met	Ala	Asn	Gly	Ile	Leu	Lys	Val	Pro	Ala	Ile	Asn	Val	Asn	Asp	Ser
195						200						205			
Val	Thr	Lys	Ser	Lys	Phe	Asp	Asn	Leu	Tyr	Gly	Cys	Arg	Glu	Ser	Leu
210						215						220			
Ile	Asp	Gly	Ile	Lys	Arg	Ala	Thr	Asp	Val	Met	Ile	Ala	Gly	Lys	Val
225						230						235			
Ala	Val	Val	Ala	Gly	Tyr	Gly	Asp	Val	Gly	Lys	Gly	Cys	Ala	Gln	Ala
			245						250			255			
Leu	Arg	Gly	Phe	Gly	Ala	Arg	Val	Ile	Ile	Thr	Glu	Ile	Asp	Pro	Ile
			260						265			270			
Asn	Ala	Leu	Gln	Ala	Ala	Met	Glu	Gly	Tyr	Glu	Val	Thr	Thr	Met	Asp
275						280						285			
Glu	Ala	Cys	Gln	Glu	Gly	Asn	Ile	Phe	Val	Thr	Thr	Thr	Gly	Cys	Ile
290						295						300			

1044

Asp Ile Ile Leu Gly Arg His Phe Glu Gln Met Lys Asp Asp Ala Ile  
 305 310 315 320

Val Cys Asn Ile Gly His Phe Asp Val Glu Ile Asp Val Lys Trp Leu  
 325 330 335

Asn Glu Asn Ala Val Glu Lys Val Asn Ile Lys Pro Gln Val Asp Arg  
 340 345 350

Tyr Arg Leu Lys Asn Gly Arg Arg Ile Ile Leu Leu Ala Glu Gly Arg  
 355 360 365

Leu Val Asn Leu Gly Cys Ala Met Gly His Pro Ser Phe Val Met Ser  
 370 375 380

Asn Ser Phe Thr Asn Gln Val Met Ala Gln Ile Glu Leu Trp Thr His  
 385 390 395 400

Pro Asp Lys Tyr Pro Val Gly Val His Phe Leu Pro Lys Lys Leu Asp  
 405 410 415

Glu Ala Val Ala Glu Ala His Leu Gly Lys Leu Asn Val Lys Leu Thr  
 420 425 430

Lys Leu Thr Glu Lys Gln Ala Gln Tyr Leu Gly Met Ser Cys Asp Gly  
 435 440 445

Pro Phe Lys Pro Asp His Tyr Arg Tyr  
 450 455

&lt;210&gt; 1060

&lt;211&gt; 511

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1060

Glu Gly Val Met Ala Asp Gly Gln Val Ala Glu Leu Leu Leu Arg Arg  
 1 5 10 15

Leu Glu Ala Ser Asp Gly Gly Leu Asp Ser Ala Glu Leu Ala Ala Glu  
 20 25 30

Leu Gly Met Glu His Gln Ala Val Val Gly Ala Val Lys Ser Leu Gln  
 35 40 45

Ala Leu Gly Glu Val Ile Glu Ala Glu Leu Arg Ser Thr Lys His Trp  
 50 55 60

1045

Glu Leu Thr Ala Glu Gly Glu Glu Ile Ala Arg Glu Gly Ser His Glu  
 65 70 75 80  
 Ala Arg Val Phe Arg Ser Ile Pro Pro Glu Gly Leu Ala Gln Ser Glu  
 85 90 95  
 Leu Met Arg Leu Pro Ser Gly Lys Val Gly Phe Ser Lys Ala Met Ser  
 100 105 110  
 Asn Lys Trp Ile Arg Val Asp Lys Ser Ala Ala Asp Gly Pro Arg Val  
 115 120 125  
 Phe Arg Val Val Asp Ser Met Glu Asp Glu Val Gln Arg Arg Leu Gln  
 130 135 140  
 Leu Val Arg Gly Gly Gln Ala Glu Lys Leu Gly Glu Lys Glu Arg Ser  
 145 150 155 160  
 Glu Leu Arg Lys Arg Lys Leu Leu Ala Glu Val Thr Leu Lys Thr Tyr  
 165 170 175  
 Trp Val Ser Lys Gly Ser Ala Phe Ser Thr Ser Ile Ser Lys Gln Glu  
 180 185 190  
 Thr Glu Leu Ser Pro Glu Met Ile Ser Ser Gly Ser Trp Arg Asp Arg  
 195 200 205  
 Pro Phe Lys Pro Tyr Asn Phe Leu Ala His Gly Val Leu Pro Asp Ser  
 210 215 220  
 Gly His Leu His Pro Leu Leu Lys Val Arg Ser Gln Phe Arg Gln Ile  
 225 230 235 240  
 Phe Leu Glu Met Gly Phe Thr Glu Met Pro Thr Asp Asn Phe Ile Glu  
 245 250 255  
 Ser Ser Phe Trp Asn Phe Asp Ala Leu Phe Gln Pro Gln Gln His Pro  
 260 265 270  
 Ala Arg Asp Gln His Asp Thr Phe Phe Leu Arg Asp Pro Ala Glu Ala  
 275 280 285  
 Leu Gln Leu Pro Met Asp Tyr Val Gln Arg Val Lys Arg Thr His Ser  
 290 295 300  
 Gln Gly Gly Tyr Gly Ser Gln Gly Tyr Lys Tyr Asn Trp Lys Leu Asp  
 305 310 315 320  
 Glu Ala Arg Lys Asn Leu Leu Arg Thr His Thr Thr Ser Ala Ser Ala  
 325 330 335

1046

Arg Ala Leu Tyr Arg Leu Ala Gln Lys Lys Pro Phe Thr Pro Val Lys  
                   340                                  345                                  350  
 Tyr Phe Ser Ile Asp Arg Val Phe Arg Asn Glu Thr Leu Asp Ala Thr  
                   355                                  360                                  365  
 His Leu Ala Glu Phe His Gln Ile Glu Gly Val Val Ala Asp His Gly  
                   370                                  375                                  380  
 Leu Thr Leu Gly His Leu Met Gly Val Leu Arg Glu Phe Phe Thr Lys  
 385                                  390                                  395                                  400  
 Leu Gly Ile Thr Gln Leu Arg Phe Lys Pro Ala Tyr Asn Pro Tyr Thr  
                                   405                                  410                                  415  
 Glu Pro Ser Met Glu Val Phe Ser Tyr His Gln Gly Leu Lys Lys Trp  
                   420                                  425                                  430  
 Val Glu Val Gly Asn Ser Gly Val Phe Arg Pro Glu Met Leu Leu Pro  
                   435                                  440                                  445  
 Met Gly Leu Pro Glu Asn Val Ser Val Ile Ala Trp Gly Leu Ser Leu  
                   450                                  455                                  460  
 Glu Arg Pro Thr Met Ile Lys Tyr Gly Ile Asn Asn Ile Arg Glu Leu  
 465                                  470                                  475                                  480  
 Val Gly His Lys Val Asn Leu Gln Met Val Tyr Asp Ser Pro Leu Cys  
                   485                                  490                                  495  
 Arg Leu Asp Ala Glu Pro Arg Pro Pro Pro Thr Gln Glu Ala Ala  
                   500                                  505                                  510

&lt;210&gt; 1061

&lt;211&gt; 228

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1061

Arg Ala Ala Ser Thr Pro Arg Ala Ala Pro Gly Ala Ala Leu Leu Ser  
   1                                  5                                  10                                  15  
 Pro Pro Gly Leu Arg Ala Ala Pro Ala Ala Leu Val Met Gly Glu Gly  
                   20                                  25                                  30  
 Thr Cys Glu Lys Arg Arg Asp Ala Glu Tyr Gly Ala Ser Pro Glu Gln  
                   35                                  40                                  45  
 Val Ala Asp Asn Gly Asp Asp His Ser Glu Gly Gly Leu Val Glu Asn

1047

50                      55                      60  
 His Val Asp Ser Thr Met Asn Met Leu Gly Gly Gly Gly Ser Ala Gly  
 65                      70                      75                      80  
 Arg Lys Pro Leu Lys Ser Gly Met Lys Glu Leu Ala Val Phe Arg Glu  
                     85                      90                      95  
 Lys Val Thr Glu Gln His Arg Gln Met Gly Lys Gly Gly Lys His His  
                     100                      105                      110  
 Leu Gly Leu Glu Glu Pro Lys Lys Leu Arg Pro Pro Pro Ala Arg Thr  
                     115                      120                      125  
 Pro Cys Gln Gln Glu Leu Asp Gln Val Leu Glu Arg Ile Ser Thr Met  
                     130                      135                      140  
 Arg Leu Pro Asp Glu Arg Gly Pro Leu Glu His Leu Tyr Ser Leu His  
 145                      150                      155                      160  
 Ile Pro Asn Cys Asp Lys His Gly Leu Tyr Asn Leu Lys Gln Cys Lys  
                     165                      170                      175  
 Met Ser Leu Asn Gly Gln Arg Gly Glu Cys Trp Cys Val Asn Pro Asn  
                     180                      185                      190  
 Thr Gly Lys Leu Ile Gln Gly Ala Pro Thr Ile Arg Gly Asp Pro Glu  
                     195                      200                      205  
 Cys His Leu Phe Tyr Asn Glu Gln Gln Glu Ala Arg Gly Val His Thr  
                     210                      215                      220  
 Gln Arg Met Gln  
 225

&lt;210&gt; 1062

&lt;211&gt; 324

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1062

Pro Arg Val Met Ala Met Ala Thr Lys Gly Gly Thr Val Lys Ala Ala  
 1                      5                      10                      15  
 Ser Gly Phe Asn Ala Met Glu Asp Ala Gln Thr Leu Arg Lys Ala Met  
                     20                      25                      30  
 Lys Gly Leu Gly Thr Asp Glu Asp Ala Ile Ile Ser Val Leu Ala Tyr  
                     35                      40                      45

1048

Arg	Asn	Thr	Ala	Gln	Arg	Gln	Glu	Ile	Arg	Thr	Ala	Tyr	Lys	Ser	Thr	50	55	60	
Ile	Gly	Arg	Asp	Leu	Ile	Asp	Asp	Leu	Lys	Ser	Glu	Leu	Ser	Gly	Asn	65	70	75	80
Phe	Glu	Gln	Val	Ile	Val	Gly	Met	Met	Thr	Pro	Thr	Val	Leu	Tyr	Asp	85	90	95	
Val	Gln	Glu	Leu	Arg	Arg	Ala	Met	Lys	Gly	Ala	Gly	Thr	Asp	Glu	Gly	100	105	110	
Cys	Leu	Ile	Glu	Ile	Leu	Ala	Ser	Arg	Thr	Pro	Glu	Glu	Ile	Arg	Arg	115	120	125	
Ile	Ser	Gln	Thr	Tyr	Gln	Gln	Gln	Tyr	Gly	Arg	Ser	Leu	Glu	Asp	Asp	130	135	140	
Ile	Arg	Ser	Asp	Thr	Ser	Phe	Met	Phe	Gln	Arg	Val	Leu	Val	Ser	Leu	145	150	155	160
Ser	Ala	Gly	Gly	Arg	Asp	Glu	Gly	Asn	Tyr	Leu	Asp	Asp	Ala	Leu	Val	165	170	175	
Arg	Gln	Asp	Ala	Gln	Asp	Leu	Tyr	Glu	Ala	Gly	Glu	Lys	Lys	Trp	Gly	180	185	190	
Thr	Asp	Glu	Val	Lys	Phe	Leu	Thr	Val	Leu	Cys	Ser	Arg	Asn	Arg	Asn	195	200	205	
His	Leu	Leu	His	Val	Phe	Asp	Glu	Tyr	Lys	Arg	Ile	Ser	Gln	Lys	Asp	210	215	220	
Ile	Glu	Gln	Ser	Ile	Lys	Ser	Glu	Thr	Ser	Gly	Ser	Phe	Glu	Asp	Ala	225	230	235	240
Leu	Leu	Ala	Ile	Val	Lys	Cys	Met	Arg	Asn	Lys	Ser	Ala	Tyr	Phe	Ala	245	250	255	
Glu	Lys	Leu	Tyr	Lys	Ser	Met	Lys	Gly	Leu	Gly	Thr	Asp	Asp	Asn	Thr	260	265	270	
Leu	Ile	Arg	Val	Met	Val	Ser	Arg	Ala	Glu	Ile	Asp	Met	Leu	Asp	Ile	275	280	285	
Arg	Ala	His	Phe	Lys	Arg	Leu	Tyr	Gly	Lys	Ser	Leu	Tyr	Ser	Phe	Ile	290	295	300	
Lys	Gly	Asp	Thr	Ser	Gly	Asp	Tyr	Arg	Lys	Val	Leu	Leu	Val	Leu	Cys	305	310	315	320

1049

Gly Gly Asp Asp

&lt;210&gt; 1063

&lt;211&gt; 355

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1063

Xaa	Tyr	Xaa	Ile	Pro	Gly	Ser	Thr	His	Ala	Ser	Gly	Lys	Ile	Leu	Gly
1				5						10				15	

Ser	Gly	Ile	Ser	Ser	Ser	Ser	Val	Leu	His	Gly	Met	Val	Phe	Lys	Lys
			20					25					30		

Glu	Thr	Glu	Val	Xaa	Val	Thr	Ser	Val	Lys	Asp	Ala	Lys	Ile	Ala	Val
		35					40					45			

Tyr	Ser	Cys	Pro	Phe	Asp	Gly	Met	Ile	Thr	Glu	Thr	Lys	Gly	Thr	Val
	50					55					60				

Leu	Ile	Lys	Thr	Ala	Glu	Glu	Leu	Met	Asn	Phe	Ser	Lys	Gly	Glu	Glu
65				70						75				80	

Asn	Leu	Met	Asp	Ala	Gln	Val	Lys	Ala	Ile	Ala	Asp	Thr	Gly	Ala	Asn
			85						90					95	

Val	Val	Val	Thr	Gly	Gly	Lys	Val	Ala	Asp	Met	Ala	Leu	His	Tyr	Ala
			100					105					110		

Asn	Lys	Tyr	Asn	Ile	Met	Leu	Val	Arg	Leu	Asn	Ser	Lys	Trp	Asp	Leu
	115						120					125			



1050

Arg Arg Leu Cys Lys Thr Val Gly Ala Thr Ala Leu Pro Arg Leu Thr  
 130 135 140  
 Pro Pro Val Leu Glu Glu Met Gly His Cys Asp Ser Val Tyr Leu Ser  
 145 150 155 160  
 Glu Val Gly Asp Thr Gln Val Val Val Phe Lys His Glu Lys Glu Asp  
 165 170 175  
 Gly Ala Ile Ser Thr Ile Val Leu Arg Gly Ser Thr Asp Asn Leu Met  
 180 185 190  
 Asp Asp Ile Glu Arg Ala Val Asp Asp Gly Val Asn Thr Phe Lys Val  
 195 200 205  
 Leu Thr Arg Asp Lys Arg Leu Val Pro Gly Gly Gly Ala Thr Glu Ile  
 210 215 220  
 Glu Leu Ala Lys Gln Ile Thr Ser Tyr Gly Glu Thr Cys Pro Gly Leu  
 225 230 235 240  
 Glu Gln Tyr Ala Ile Lys Lys Phe Ala Glu Ala Phe Glu Ala Ile Pro  
 245 250 255  
 Arg Ala Leu Ala Glu Asn Ser Gly Val Lys Ala Asn Glu Val Ile Ser  
 260 265 270  
 Lys Leu Tyr Ala Val His Gln Glu Gly Asn Lys Asn Val Gly Leu Asp  
 275 280 285  
 Ile Glu Ala Glu Val Pro Ala Val Lys Asp Met Leu Glu Ala Gly Ile  
 290 295 300  
 Leu Asp Thr Tyr Leu Gly Lys Tyr Trp Ala Ile Lys Leu Ala Thr Asn  
 305 310 315 320  
 Ala Ala Val Thr Val Leu Arg Val Asp Gln Ile Ile Met Ala Lys Pro  
 325 330 335  
 Ala Gly Gly Pro Lys Pro Pro Ser Gly Lys Lys Asp Trp Asp Asp Asp  
 340 345 350  
 Gln Asn Asp  
 355

&lt;210&gt; 1064

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1051

&lt;400&gt; 1064

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Ser Pro Phe Thr Leu His Cys Cys His Ser Thr Leu Tyr Asp Gly Arg
 1             5             10             15

Thr Gly Ser Ser Arg Glu Asn Cys Thr Val Thr Thr Val Phe Phe Thr
          20             25             30

Leu Phe Gln Gly Ser Leu Ser Pro Asp Ile Glu Glu Ile Ser Phe Arg
      35             40             45

Pro Glu Thr Gln Arg Pro His Ser Pro Val Ile Lys Pro Arg Phe His
      50             55             60

Ser Gly Pro Arg Ser Gly Ala Trp Pro Leu Leu Phe Gly Ser His Trp
      65             70             75             80

Glu Ala His Trp Pro Trp Ile Ile Ser Ser Cys Thr Pro Gly Val Leu
          85             90             95

Pro Ala Cys Leu Leu Ser Trp Thr Ala Val Cys Lys Lys Val Thr Lys
      100             105             110

Thr

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&lt;210&gt; 1065

&lt;211&gt; 634

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (325)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1065

```

Val Gln Gly Phe Glu Ser Ala Thr Phe Leu Gly Tyr Phe Lys Ser Gly
 1             5             10             15

Leu Lys Tyr Lys Lys Gly Gly Val Ala Ser Gly Phe Lys His Val Val
      20             25             30

Pro Asn Glu Val Val Val Gln Arg Leu Phe Gln Val Lys Gly Arg Arg
      35             40             45

Val Val Arg Ala Thr Glu Val Pro Val Ser Trp Glu Ser Phe Asn Asn
      50             55             60

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1052

Gly	Asp	Cys	Phe	Ile	Leu	Asp	Leu	Gly	Asn	Asn	Ile	His	Gln	Trp	Cys	65	70	75	80
Gly	Ser	Asn	Ser	Asn	Arg	Tyr	Glu	Arg	Leu	Lys	Ala	Thr	Gln	Val	Ser	85	90	95	
Lys	Gly	Ile	Arg	Asp	Asn	Glu	Arg	Ser	Gly	Arg	Ala	Arg	Val	His	Val	100	105	110	
Ser	Glu	Glu	Gly	Thr	Glu	Pro	Glu	Ala	Met	Leu	Gln	Val	Leu	Gly	Pro	115	120	125	
Lys	Pro	Ala	Leu	Pro	Ala	Gly	Thr	Glu	Asp	Thr	Ala	Lys	Glu	Asp	Ala	130	135	140	
Ala	Asn	Arg	Lys	Leu	Ala	Lys	Leu	Tyr	Lys	Val	Ser	Asn	Gly	Ala	Gly	145	150	155	160
Thr	Met	Ser	Val	Ser	Leu	Val	Ala	Asp	Glu	Asn	Pro	Phe	Ala	Gln	Gly	165	170	175	
Ala	Leu	Lys	Ser	Glu	Asp	Cys	Phe	Ile	Leu	Asp	His	Gly	Lys	Asp	Gly	180	185	190	
Lys	Ile	Phe	Val	Trp	Lys	Gly	Lys	Gln	Ala	Asn	Thr	Glu	Glu	Arg	Lys	195	200	205	
Ala	Ala	Leu	Lys	Thr	Ala	Ser	Asp	Phe	Ile	Thr	Lys	Met	Asp	Tyr	Pro	210	215	220	
Lys	Gln	Thr	Gln	Val	Ser	Val	Leu	Pro	Glu	Gly	Gly	Glu	Thr	Pro	Leu	225	230	235	240
Phe	Lys	Gln	Phe	Phe	Lys	Asn	Trp	Arg	Asp	Pro	Asp	Gln	Thr	Asp	Gly	245	250	255	
Leu	Gly	Leu	Ser	Tyr	Leu	Ser	Ser	His	Ile	Ala	Asn	Val	Glu	Arg	Val	260	265	270	
Pro	Phe	Asp	Ala	Ala	Thr	Leu	His	Thr	Ser	Thr	Ala	Met	Ala	Ala	Gln	275	280	285	
His	Gly	Met	Asp	Asp	Asp	Gly	Thr	Gly	Gln	Lys	Gln	Ile	Trp	Arg	Ile	290	295	300	
Glu	Gly	Ser	Asn	Lys	Val	Pro	Val	Asp	Pro	Ala	Thr	Tyr	Gly	Gln	Phe	305	310	315	320
Tyr	Gly	Gly	Asp	Xaa	Tyr	Ile	Ile	Leu	Tyr	Asn	Tyr	Arg	His	Gly	Gly	325	330	335	

1053

Arg	Gln	Gly	Gln	Ile	Ile	Tyr	Asn	Trp	Gln	Gly	Ala	Gln	Ser	Thr	Gln	340	345	350	
Asp	Glu	Val	Ala	Ala	Ser	Ala	Ile	Leu	Thr	Ala	Gln	Leu	Asp	Glu	Glu	355	360	365	
Leu	Gly	Gly	Thr	Pro	Val	Gln	Ser	Arg	Val	Val	Gln	Gly	Lys	Glu	Pro	370	375	380	
Ala	His	Leu	Met	Ser	Leu	Phe	Gly	Gly	Lys	Pro	Met	Ile	Ile	Tyr	Lys	385	390	395	400
Gly	Gly	Thr	Ser	Arg	Glu	Gly	Gly	Gln	Thr	Ala	Pro	Ala	Ser	Thr	Arg	405	410	415	
Leu	Phe	Gln	Val	Arg	Ala	Asn	Ser	Ala	Gly	Ala	Thr	Arg	Ala	Val	Glu	420	425	430	
Val	Leu	Pro	Lys	Ala	Gly	Ala	Leu	Asn	Ser	Asn	Asp	Ala	Phe	Val	Leu	435	440	445	
Lys	Thr	Pro	Ser	Ala	Ala	Tyr	Leu	Trp	Val	Gly	Thr	Gly	Ala	Ser	Glu	450	455	460	
Ala	Glu	Lys	Thr	Gly	Ala	Gln	Glu	Leu	Leu	Arg	Val	Leu	Arg	Ala	Gln	465	470	475	480
Pro	Val	Gln	Val	Ala	Glu	Gly	Ser	Glu	Pro	Asp	Gly	Phe	Trp	Glu	Ala	485	490	495	
Leu	Gly	Gly	Lys	Ala	Ala	Tyr	Arg	Thr	Ser	Pro	Arg	Leu	Lys	Asp	Lys	500	505	510	
Lys	Met	Asp	Ala	His	Pro	Pro	Arg	Leu	Phe	Ala	Cys	Ser	Asn	Lys	Ile	515	520	525	
Gly	Arg	Phe	Val	Ile	Glu	Glu	Val	Pro	Gly	Glu	Leu	Met	Gln	Glu	Asp	530	535	540	
Leu	Ala	Thr	Asp	Asp	Val	Met	Leu	Leu	Asp	Thr	Trp	Asp	Gln	Val	Phe	545	550	555	560
Val	Trp	Val	Gly	Lys	Asp	Ser	Gln	Glu	Glu	Glu	Lys	Thr	Glu	Ala	Leu	565	570	575	
Thr	Ser	Ala	Lys	Arg	Tyr	Ile	Glu	Thr	Asp	Pro	Ala	Asn	Arg	Asp	Arg	580	585	590	
Arg	Thr	Pro	Ile	Thr	Val	Val	Lys	Gln	Gly	Phe	Glu	Pro	Pro	Ser	Phe	595	600	605	

1054

Val Gly Trp Phe Leu Gly Trp Asp Asp Asp Tyr Trp Ser Val Asp Pro  
 610 615 620

Leu Asp Arg Ala Met Ala Glu Leu Ala Ala  
 625 630

&lt;210&gt; 1066

&lt;211&gt; 117

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1066

Arg Ala Arg Gly Arg Cys Arg Arg Ser Pro Asp Gly Val Gly Ile Glu  
 1 5 10 15

Ala Pro Arg Lys Lys Val Lys Tyr Gln Glu Ile Gln Val Glu Glu Pro  
 20 25 30

Tyr Tyr Asp Cys His Glu Cys Thr Glu Thr Phe Thr Ser Ser Thr Ala  
 35 40 45

Phe Ser Glu His Leu Lys Thr His Ala Ser Met Ile Ile Phe Glu Pro  
 50 55 60

Ala Asn Ala Phe Gly Glu Cys Ser Gly Tyr Ile Glu Arg Ala Ser Thr  
 65 70 75 80

Ser Thr Gly Gly Ala Asn Gln Ala Asp Glu Lys Tyr Phe Lys Cys Asp  
 85 90 95

Val Cys Gly Gln Leu Phe Asn Asp Arg Leu Ser Leu Ala Arg His Gln  
 100 105 110

Asn Thr His Thr Gly  
 115

&lt;210&gt; 1067

&lt;211&gt; 192

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1067

Pro Glu Gln Arg Gly Ser Ser Met Ala His Gly Pro Gly Ala Leu Met  
 1 5 10 15

Leu Lys Cys Val Val Val Gly Asp Gly Ala Val Gly Lys Thr Cys Leu  
 20 25 30

1055

Leu Met Ser Tyr Ala Asn Asp Ala Phe Pro Glu Ser Thr Cys Pro Pro  
35 40 45

Ser Ser Thr Thr Thr Gln Glu Asp Tyr Asp Arg Leu Arg Pro Leu Ser  
50 55 60

Tyr	Pro	Met	Thr	Asp	Val	Phe	Leu	Ile	Cys	Phe	Ser	Val	Val	Asn	Pro
65					70					75					80

Ala Ser Phe Gln Asn Val Lys Glu Glu Trp Val Pro Glu Leu Lys Glu  
85 90 95

Tyr Ala Pro Asn Val Pro Phe Leu Leu Ile Gly Thr Gln Ile Asp Leu  
100 105 110

Arg Asp Asp Pro Lys Thr Leu Ala Arg Leu Asn Asp Met Lys Glu Lys  
115 120 125

Pro Ile Cys Val Glu Gln Gly Gln Lys Leu Ala Lys Glu Ile Gly Ala  
130 135 140

Cys Cys Tyr Val Glu Cys Ser Ala Leu Thr Gln Lys Gly Leu Lys Thr  
145 150 155 160

Val Phe Asp Glu Ala Ile Ile Ala Ile Leu Thr Pro Lys Lys His Thr  
165 170 175

Val Lys Lys Arg Ile Gly Ser Arg Cys Ile Asn Cys Cys Leu Ile Thr  
180 185 190

<210> 1068

<211> 360

<212> PRT

<213> Homo sapiens

<400> 1068

Ser Arg Trp Ala Arg Arg Asp Pro Gln Glu Arg Arg Glu Arg Gly Thr  
1 5 10 15

Arg Val Gln Ser Ser Gly Thr Trp Ile Gly Ala Gly Ala Met Gly Gly  
20 25 30

Glu Gln Glu Glu Glu Arg Phe Asp Gly Met Leu Leu Ala Met Ala Gln  
35 40 45

1056

Gln His Glu Gly Gly Val Gln Glu Leu Val Asn Thr Phe Phe Ser Phe  
 50 55 60

Leu Arg Arg Lys Thr Asp Phe Phe Ile Gly Gly Glu Glu Gly Met Ala  
 65 70 75 80

Glu Lys Leu Ile Thr Gln Thr Phe Ser His His Asn Gln Leu Ala Gln  
 85 90 95

Lys Thr Arg Arg Glu Lys Arg Ala Arg Gln Glu Ala Glu Arg Arg Glu  
 100 105 110

Lys Ala Glu Arg Ala Ala Arg Leu Ala Lys Glu Ala Lys Ser Glu Thr  
 115 120 125

Ser Gly Pro Gln Ile Lys Glu Leu Thr Asp Glu Glu Ala Glu Arg Leu  
 130 135 140

Gln Leu Glu Ile Asp Gln Lys Lys Asp Ala Glu Asn His Glu Ala Gln  
 145 150 155 160

Leu Lys Asn Gly Ser Leu Asp Ser Pro Gly Lys Gln Asp Thr Glu Glu  
 165 170 175

Asp Glu Glu Glu Asp Glu Lys Asp Lys Gly Lys Leu Lys Pro Asn Leu  
 180 185 190

Gly Asn Gly Ala Asp Leu Pro Asn Tyr Arg Trp Thr Gln Thr Leu Ser  
 195 200 205

Glu Leu Asp Leu Ala Val Pro Phe Cys Val Asn Phe Arg Leu Lys Gly  
 210 215 220

Lys Asp Met Val Val Asp Ile Gln Arg Arg His Leu Arg Val Gly Leu  
 225 230 235 240

Lys Gly Gln Pro Ala Ile Ile Asp Gly Glu Leu Tyr Asn Glu Val Lys  
 245 250 255

Val Glu Glu Ser Ser Trp Leu Ile Glu Asp Gly Lys Val Val Thr Val  
 260 265 270

His Leu Glu Lys Ile Asn Lys Met Glu Trp Trp Ser Arg Leu Val Ser  
 275 280 285

Ser Asp Pro Glu Ile Asn Thr Lys Lys Ile Asn Pro Glu Asn Ser Lys  
 290 295 300

Leu Ser Asp Leu Asp Ser Glu Thr Arg Ser Met Val Glu Lys Met Met  
 305 310 315 320

Tyr Asp Gln Arg Gln Lys Ser Met Gly Leu Pro Thr Ser Asp Glu Gln  
325 330 335

Lys Lys Gln Glu Ile Leu Lys Lys Phe Met Asp Gln His Pro Glu Met  
340 345 350

Asp Phe Ser Lys Ala Lys Phe Asn  
355 360

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<210> 1069
<211> 174
<212> PRT
<213> Homo sapiens
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<220>
<221> SITE
<222> (52)
<223> Xaa equals any of the naturally occurring L-amino acids
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<400> 1069
Val Trp Leu Ser Trp Asp Gln Glu Lys Ile Pro Val Leu Asp Gln Glu
  1                      5                      10                      15

Ala Ala Asp Gly Ser Ser Thr Leu Gly Gly Gly Ala Gly Thr Met Gly
      20                      25                      30

Leu Ser Ala Arg Tyr Gly Pro Gln Phe Thr Leu Gln His Val Pro Asp
      35                      40                      45

Tyr Arg Gln Xaa Val Tyr Ile Pro Gly Ser Asn Ala Thr Leu Thr Asn
      50                      55                      60

Ala Ala Gly Lys Arg Gly Trp Gln Gly Pro Ser Arg Trp Gln Trp Gln
      65                      70                      75                      80

Gln Glu Glu Val Gly Gln Glu Gly Glu Glu Val Thr Trp Arg Pro Gly
      85                      90                      95

Gln Glu Pro Gln Gly Gly Leu Ser Pro Thr Ser Pro Ala Ser Pro Tyr
      100                      105                      110

Leu His Pro Gly Leu Arg Val Ser Gly Leu Thr Pro Arg Ile Leu Val
      115                      120                      125

Gly Ala Lys Ala Met Leu Pro Leu Gly Asn Arg Asn Lys Cys Pro Val
      130                      135                      140

Ser Thr Tyr Pro Phe Pro Pro Arg Gly Leu Asn Met Gln Lys Gln Phe
      145                      150                      155                      160

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1058

Arg Trp Glu Pro Pro Ser Asn Gln Leu Leu Tyr Pro Trp Gly  
 165 170

&lt;210&gt; 1070

&lt;211&gt; 445

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1070

Pro Arg Gly Leu Thr Gly Leu Trp Arg Ser Ser Leu Pro Ile Arg Lys  
 1 5 10 15

Leu Gln Leu Pro Pro Asp Ala Leu Lys Met Ala Thr Ser Leu Gly Ser  
 20 25 30

Asn Thr Tyr Asn Arg Gln Asn Trp Glu Asp Ala Asp Phe Pro Ile Leu  
 35 40 45

Cys Gln Thr Cys Leu Gly Glu Asn Pro Tyr Ile Arg Met Thr Lys Glu  
 50 55 60

Lys Tyr Gly Lys Glu Cys Lys Ile Cys Ala Arg Pro Phe Thr Val Phe  
 65 70 75 80

Arg Trp Cys Pro Gly Val Arg Met Arg Phe Lys Lys Thr Glu Val Cys  
 85 90 95

Gln Thr Cys Ser Lys Leu Lys Asn Val Cys Gln Thr Cys Leu Leu Asp  
 100 105 110

Leu Glu Tyr Gly Leu Pro Ile Gln Val Arg Asp Ala Gly Leu Ser Phe  
 115 120 125

Lys Asp Asp Met Pro Lys Ser Asp Val Asn Lys Glu Tyr Tyr Thr Gln  
 130 135 140

Asn Met Glu Arg Glu Ile Ser Asn Ser Asp Gly Thr Arg Pro Val Gly  
 145 150 155 160

Met Leu Gly Lys Ala Thr Ser Thr Ser Asp Met Leu Leu Lys Leu Ala  
 165 170 175

Arg Thr Thr Pro Tyr Tyr Lys Arg Asn Arg Pro His Ile Cys Ser Phe  
 180 185 190

Trp Val Lys Gly Glu Cys Lys Arg Gly Glu Glu Cys Pro Tyr Arg His  
 195 200 205

1059

Glu Lys Pro Thr Asp Pro Asp Asp Pro Leu Ala Asp Gln Asn Ile Lys  
 210 215 220  
 Asp Arg Tyr Tyr Gly Ile Asn Asp Pro Val Ala Asp Lys Leu Leu Lys  
 225 230 235 240  
 Arg Ala Ser Thr Met Pro Arg Leu Asp Pro Pro Glu Asp Lys Thr Ile  
 245 250 255  
 Thr Thr Leu Tyr Val Gly Gly Leu Gly Asp Thr Ile Thr Glu Thr Asp  
 260 265 270  
 Leu Arg Asn His Phe Tyr Gln Phe Gly Glu Ile Arg Thr Ile Thr Val  
 275 280 285  
 Val Gln Arg Gln Gln Cys Ala Phe Ile Gln Phe Ala Thr Arg Gln Ala  
 290 295 300  
 Ala Glu Val Ala Ala Glu Lys Ser Phe Asn Lys Leu Ile Val Asn Gly  
 305 310 315 320  
 Arg Arg Leu Asn Val Lys Trp Gly Arg Ser Gln Ala Ala Arg Gly Lys  
 325 330 335  
 Glu Lys Glu Lys Asp Gly Thr Thr Asp Ser Gly Ile Lys Leu Glu Pro  
 340 345 350  
 Val Pro Gly Leu Pro Gly Ala Leu Pro Pro Pro Pro Ala Ala Glu Glu  
 355 360 365  
 Glu Ala Ser Ala Asn Tyr Phe Asn Leu Pro Pro Ser Gly Pro Pro Ala  
 370 375 380  
 Val Val Asn Ile Ala Leu Pro Pro Pro Pro Gly Ile Ala Pro Pro Pro  
 385 390 395 400  
 Pro Pro Gly Phe Gly Pro His Met Phe His Pro Met Gly Pro Pro Pro  
 405 410 415  
 Pro Phe Met Arg Ala Pro Gly Pro Ile His Tyr Pro Ser Gln Asp Pro  
 420 425 430  
 Gln Arg Met Gly Ala His Ala Gly Lys His Ser Ser Pro  
 435 440 445

&lt;210&gt; 1071

&lt;211&gt; 346

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1060

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (286)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (287)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (291)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (294)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1071

Trp	Ser	Arg	Leu	Cys	Leu	Leu	Lys	Gln	Tyr	Leu	Phe	Thr	Met	Lys	Leu
1				5				10						15	

Gln	Ser	Pro	Glu	Phe	Gln	Ser	Leu	Phe	Thr	Glu	Gly	Leu	Lys	Ser	Leu
			20					25					30		

Thr	Glu	Leu	Phe	Val	Lys	Glu	Asn	His	Glu	Leu	Arg	Ile	Ala	Gly	Gly
		35					40					45			

Ala	Val	Arg	Asp	Leu	Leu	Asn	Gly	Val	Lys	Pro	Gln	Asp	Ile	Asp	Phe
	50					55					60				

Ala	Thr	Thr	Ala	Thr	Pro	Thr	Gln	Met	Lys	Glu	Met	Phe	Gln	Ser	Ala
65					70					75					80

Gly	Ile	Arg	Met	Ile	Asn	Asn	Arg	Gly	Glu	Lys	His	Gly	Thr	Ile	Thr
				85						90				95	

Ala	Arg	Leu	His	Glu	Glu	Asn	Phe	Glu	Ile	Thr	Thr	Leu	Arg	Ile	Asp
		100						105					110		

Val	Thr	Thr	Asp	Gly	Arg	His	Ala	Glu	Val	Glu	Phe	Thr	Thr	Asp	Trp
		115					120					125			

Gln	Lys	Asp	Ala	Glu	Arg	Arg	Asp	Leu	Thr	Ile	Asn	Ser	Met	Phe	Leu
	130						135				140				

Gly	Phe	Asp	Gly	Thr	Leu	Phe	Asp	Tyr	Phe	Asn	Gly	Tyr	Glu	Asp	Leu
145					150					155					160

1061

Lys Asn Lys Lys Val Arg Phe Val Gly His Ala Lys Gln Arg Ile Gln  
                             165                            170                            175  
 Glu Asp Tyr Leu Arg Ile Leu Arg Tyr Phe Arg Phe Tyr Gly Arg Ile  
                             180                            185                            190  
 Val Asp Lys Pro Gly Asp His Asp Pro Glu Thr Leu Glu Ala Ile Ala  
                             195                            200                            205  
 Glu Asn Ala Lys Gly Leu Ala Gly Ile Ser Gly Glu Arg Ile Trp Val  
                             210                            215                            220  
 Glu Leu Lys Lys Ile Leu Val Gly Asn His Val Asn His Leu Ile His  
                             225                            230                            235                            240  
 Leu Ile Tyr Asp Leu Asp Val Ala Pro Tyr Ile Gly Leu Pro Ala Asn  
                             245                            250                            255  
 Ala Ser Leu Glu Glu Phe Asp Lys Val Ser Lys Asn Val Asp Gly Phe  
                             260                            265                            270  
 Ser Pro Lys Pro Val Thr Leu Leu Ala Ser Leu Phe Lys Xaa Xaa Asp  
                             275                            280                            285  
 Asp Val Xaa Lys Leu Xaa Leu Arg Leu Lys Ile Ala Lys Glu Glu Lys  
                             290                            295                            300  
 Asn Leu Gly Leu Phe Ile Val Lys Asn Arg Lys Asp Leu Ile Lys Ala  
                             305                            310                            315                            320  
 Thr Asp Ser Ser Asp Pro Leu Lys Pro Tyr Gln Asp Phe Ile Ile Asp  
                             325                            330                            335  
 Ser Arg Glu Pro Asp Ala His Ser Cys Met  
                             340                            345

&lt;210&gt; 1072

&lt;211&gt; 404

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (77)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1062

&lt;222&gt; (81)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1072

Glu Asp Ser Leu Asn Leu Asp Leu Thr Pro Arg Met Leu Arg Arg Leu  
 1 5 10 15

Leu Glu Arg Pro Cys Thr Leu Ala Leu Leu Val Gly Ser Gln Leu Ala  
 20 25 30

Val Met Met Tyr Leu Ser Leu Gly Gly Phe Arg Ser Leu Ser Ala Leu  
 35 40 45

Phe Gly Arg Asp Gln Gly Pro Thr Phe Asp Tyr Ser His Pro Arg Asp  
 50 55 60

Val Tyr Ser Asn Leu Ser His Leu Pro Gly Ala Pro Xaa Gly Pro Pro  
 65 70 75 80

Xaa Pro Gln Gly Leu Pro Tyr Cys Pro Glu Arg Ser Pro Leu Leu Val  
 85 90 95

Gly Pro Val Ser Val Ser Phe Ser Pro Val Pro Ser Leu Ala Glu Ile  
 100 105 110

Val Glu Arg Asn Pro Arg Val Glu Pro Gly Gly Arg Tyr Arg Pro Ala  
 115 120 125

Gly Cys Glu Pro Arg Ser Arg Thr Ala Ile Ile Val Pro His Arg Ala  
 130 135 140

Arg Glu His His Leu Arg Leu Leu Leu Tyr His Leu His Pro Phe Leu  
 145 150 155 160

Gln Arg Gln Gln Leu Ala Tyr Gly Ile Tyr Val Ile His Gln Ala Gly  
 165 170 175

Asn Gly Thr Phe Asn Arg Ala Lys Leu Leu Asn Val Gly Val Arg Glu  
 180 185 190

Ala Leu Arg Asp Glu Glu Trp Asp Cys Leu Phe Leu His Asp Val Asp  
 195 200 205

Leu Leu Pro Glu Asn Asp His Asn Leu Tyr Val Cys Asp Pro Arg Gly  
 210 215 220

Pro Arg His Val Ala Val Ala Met Asn Lys Phe Gly Tyr Ser Leu Pro  
 225 230 235 240

Tyr Pro Gln Tyr Phe Gly Gly Val Ser Ala Leu Thr Pro Asp Gln Tyr  
 245 250 255

1063

Leu Lys Met Asn Gly Phe Pro Asn Glu Tyr Trp Gly Trp Gly Gly Glu  
                   260                                  265                                  270  
 Asp Asp Asp Ile Ala Thr Arg Val Arg Leu Ala Gly Met Lys Ile Ser  
                   275                                  280                                  285  
 Arg Pro Pro Thr Ser Val Gly His Tyr Lys Met Val Lys His Arg Gly  
                   290                                  295                                  300  
 Asp Lys Gly Asn Glu Glu Asn Pro His Arg Phe Asp Leu Leu Val Arg  
 305                                  310                                  315                                  320  
 Thr Gln Asn Ser Trp Thr Gln Asp Gly Met Asn Ser Leu Thr Tyr Gln  
                                   325                                  330                                  335  
 Leu Leu Ala Arg Glu Leu Gly Pro Leu Tyr Thr Asn Ile Thr Ala Asp  
                   340                                  345                                  350  
 Ile Gly Thr Asp Pro Arg Gly Pro Arg Ala Pro Ser Gly Pro Arg Tyr  
                   355                                  360                                  365  
 Pro Pro Gly Ser Ser Gln Ala Phe Arg Gln Glu Met Leu Gln Arg Arg  
                   370                                  375                                  380  
 Pro Pro Ala Arg Pro Gly Pro Leu Ser Thr Ala Asn His Thr Ala Leu  
 385                                  390                                  395                                  400  
 Arg Gly Ser His

&lt;210&gt; 1073

&lt;211&gt; 217

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (68)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1073

Asn Lys Glu Gln Leu Met Asp Lys Ser Gly Ile Asp Ser Leu Asp His  
   1                                  5                                  10                                  15

Val Thr Ser Asp Ala Val Glu Leu Ala Asn Arg Ser Asp Asn Ser Ser  
                   20                                  25                                  30

Asp Ser Ser Leu Phe Lys Thr Gln Cys Ile Pro Tyr Ser Pro Lys Gly

1064

35	40	45
Glu Lys Arg Asn Pro Ile Arg Lys Phe Val Arg Thr Pro Glu Ser Val		
50	55	60
His Ala Ser Xaa Ser Ser Ser Asp Ser Ser Phe Glu Pro Ile Pro Leu		
65	70	75
Thr Ile Lys Ala Ile Phe Glu Arg Phe Lys Asn Arg Lys Lys Arg Tyr		
	85	90
Lys Lys Lys Lys Lys Arg Arg Tyr Gln Pro Thr Gly Arg Pro Arg Gly		
	100	105
Arg Pro Glu Gly Arg Arg Asn Pro Ile Tyr Ser Leu Ile Asp Lys Lys		
	115	120
Lys Gln Phe Arg Ser Arg Gly Ser Gly Phe Pro Phe Leu Glu Ser Glu		
	130	135
Asn Glu Lys Asn Ala Pro Trp Arg Lys Ile Leu Thr Phe Glu Gln Ala		
145	150	155
Val Ala Arg Gly Phe Phe Asn Tyr Ile Glu Lys Leu Lys Tyr Glu His		
	165	170
His Leu Lys Glu Ser Leu Lys Gln Met Asn Val Gly Glu Asp Leu Glu		
	180	185
Asn Glu Asp Phe Asp Ser Arg Arg Tyr Lys Phe Leu Asp Asp Asp Gly		
	195	200
Ser Ile Ser Pro Ile Glu Glu Ser Thr		
210	215	

&lt;210&gt; 1074

&lt;211&gt; 161

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (110)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1065

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (125)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (128)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (147)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1074

Thr	His	Tyr	Arg	Ala	Lys	Leu	Val	Arg	Leu	Pro	Gly	Thr	Gly	Ser	Gly
1				5					10					15	

Asn	Ser	Arg	Val	Asp	Pro	Arg	Val	Arg	Glu	Gln	Pro	Ser	Pro	Ala	Ser
			20					25					30		

Ser	Ala	Pro	Gly	Gln	Leu	Asn	Ser	Cys	Gln	Asp	Val	Leu	Pro	Ala	Glu
		35				40					45				

Pro	Ala	Ala	Val	Pro	Thr	Pro	Thr	Gln	Val	Ser	Leu	Thr	Gln	Val	Ser
	50					55					60				

Pro	Lys	Glu	Pro	Ser	Thr	Val	Ser	Ala	Ser	Ser	Phe	Leu	Trp	Leu	Cys
	65				70					75				80	

Pro	Lys	Leu	Trp	Gly	Leu	Trp	Pro	Ser	Ser	Glu	Gly	Gly	Cys	Phe	Leu
			85					90						95	

Asn	His	His	Arg	Arg	His	His	Arg	Cys	Arg	Arg	Gln	Arg	Xaa	Asn	Ser
			100					105					110		

Cys	Asp	Arg	Ala	Val	Val	Ser	Lys	Ala	Xaa	Xaa	Leu	Xaa	Ala	Ala	Xaa
		115					120					125			

Phe	Trp	Gly	Leu	Leu	Leu	Ile	Gln	Ile	Leu	Met	Leu	Arg	Gln	Ala	Ile
	130					135					140				

Phe	Gly	Xaa	Asn	Lys	Asn	Ser	Gln	Glu	Ala	Lys	Asn	Ser	Pro	Ile	Trp
	145				150					155				160	



1066

Lys

&lt;210&gt; 1075

&lt;211&gt; 221

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1075

Ser	Ser	Ser	Trp	His	Ala	Arg	Tyr	Thr	Val	Leu	Thr	Tyr	Leu	Gln	Thr
1				5					10					15	

Met	Val	Phe	Tyr	Asn	Leu	Phe	Ile	Phe	Leu	Asn	Asn	Glu	Asp	Ala	Val
		20					25					30			

Lys	Asp	Ile	Arg	Trp	Leu	Val	Ile	Ser	Leu	Leu	Glu	Asp	Glu	Gln	Leu
	35					40					45				

Glu	Val	Arg	Glu	Met	Ala	Ala	Thr	Thr	Leu	Ser	Gly	Leu	Leu	Gln	Cys
	50				55						60				

Asn	Phe	Leu	Thr	Met	Asp	Ser	Pro	Met	Gln	Ile	His	Phe	Glu	Gln	Leu
65				70					75						80

Cys	Lys	Thr	Lys	Leu	Pro	Lys	Lys	Arg	Lys	Arg	Asp	Pro	Gly	Ser	Val
			85					90						95	

Gly	Asp	Thr	Ile	Pro	Ser	Ala	Glu	Leu	Val	Lys	Arg	His	Ala	Gly	Val
		100						105					110		

Leu	Gly	Leu	Gly	Ala	Cys	Val	Leu	Ser	Ser	Pro	Tyr	Asp	Val	Pro	Thr
	115						120					125			

Trp	Met	Pro	Gln	Leu	Leu	Met	Asn	Leu	Ser	Ala	His	Leu	Asn	Asp	Pro
	130					135					140				

Gln	Pro	Ile	Glu	Met	Thr	Val	Lys	Lys	Thr	Leu	Ser	Asn	Phe	Arg	Arg
145				150						155					160

Leu	Thr	Met	Thr	Thr	Gly	Arg	Asn	Ile	Asn	Ser	Asn	Ser	Leu	Met	Thr
			165					170						175	

Asn	Cys	Leu	Phe	Ser	Pro	Ile	Phe	Leu	Cys	His	His	Ala	Ile	Met	His
		180						185					190		

Arg	Lys	Met	Thr	Ser	Pro	His	Phe	Arg	Leu	Phe	Ser	Ser	Lys	Ile	Pro
		195					200					205			

1067

His Pro Gln Val Pro Ser Val Val Ala Leu Cys Lys Phe  
 210 215 220

&lt;210&gt; 1076

&lt;211&gt; 166

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (135)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (163)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (166)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1076

Ala Arg Gly Ala Arg Val Arg Ala Cys Ala Ser Leu Gly Ser Trp Arg  
 1 5 10 15

Gly Pro Arg Gly Glu Gly Trp Lys Met Ser Met Asp Val Thr Phe Leu  
 20 25 30

Gly Thr Gly Ala Ala Tyr Pro Ser Pro Thr Arg Gly Ala Ser Ala Val  
 35 40 45

Val Leu Arg Cys Glu Gly Glu Xaa Trp Leu Phe Asp Cys Gly Glu Gly  
 50 55 60

Thr Gln Thr Gln Leu Met Lys Ser Gln Leu Lys Ala Gly Arg Ile Thr  
 65 70 75 80

Lys Ile Phe Ile Thr His Leu His Gly Asp His Phe Phe Gly Leu Pro  
 85 90 95

Gly Leu Leu Cys Thr Ile Ser Leu Gln Ser Gly Ser Met Val Ser Lys  
 100 105 110

1068

Gln Pro Ile Glu Ile Tyr Gly Pro Val Gly Phe Gly Thr Leu Ser Gly  
           115                          120                          125  
 Glu Pro Trp Asn Ser Leu Xaa Arg Glu Leu Val Phe His Tyr Val Val  
           130                          135                          140  
 His Glu Leu Val Pro Thr Ala Asp Gln Cys Pro Ala Glu Gly Thr Lys  
           145                          150                          155                          160  
 Arg Ile Xaa Ala Cys Xaa  
                                   165

&lt;210&gt; 1077

&lt;211&gt; 239

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1077

Gly Leu Arg Ala Leu Ser Gln His Thr Asp Leu Ser Pro Leu Ser Pro  
   1                          5                          10                          15  
 Lys Thr Pro Ala Pro Ser Met Arg Xaa Lys Met Gly Asn Gly Thr Glu  
           20                          25                          30  
 Glu Asp Tyr Asn Phe Val Phe Lys Val Val Leu Ile Gly Glu Ser Gly  
           35                          40                          45  
 Val Gly Lys Thr Asn Leu Leu Ser Arg Phe Thr Arg Asn Glu Phe Ser  
           50                          55                          60  
 His Asp Ser Arg Thr Thr Ile Gly Val Glu Phe Ser Thr Arg Thr Val  
           65                          70                          75                          80  
 Met Leu Gly Thr Ala Ala Val Lys Ala Gln Ile Trp Asp Thr Ala Gly  
                           85                          90                          95  
 Leu Glu Arg Tyr Arg Ala Ile Thr Ser Ala Tyr Tyr Arg Gly Ala Val  
           100                          105                          110  
 Gly Ala Leu Leu Val Phe Asp Leu Thr Lys His Gln Thr Tyr Ala Val  
           115                          120                          125  
 Val Glu Arg Trp Leu Lys Glu Leu Tyr Asp His Ala Glu Ala Thr Ile

1069

130	135	140
Val Val Met Leu Val Gly Asn Lys Ser Asp Leu Ser Gln Ala Arg Glu		
145	150	155 160
Val Pro Thr Glu Glu Ala Arg Met Phe Ala Glu Asn Asn Gly Leu Leu		
165	170	175
Phe Leu Glu Thr Ser Ala Leu Asp Ser Thr Asn Val Glu Leu Ala Phe		
180	185	190
Glu Thr Val Leu Lys Glu Ile Phe Ala Lys Val Ser Lys Gln Arg Gln		
195	200	205
Asn Ser Ile Arg Thr Asn Ala Ile Thr Ser Gly Ser Ala Gln Ala Gly		
210	215	220
Gln Glu Pro Gly Pro Gly Glu Lys Arg Ala Cys Cys Ile Ser Leu		
225	230	235

&lt;210&gt; 1078

&lt;211&gt; 171

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1078

Ile Leu Lys Gly Ser Ser Gly Ser Val Trp Leu Arg Asn Leu Gln Leu
1 5 10 15

Gly Leu Phe Gly Thr Ala Leu Gly Leu Val Gly Leu Trp Trp Ala Glu
20 25 30

Gly Thr Ala Val Ala Thr Arg Gly Phe Phe Phe Gly Tyr Thr Pro Ala
35 40 45

Val Trp Gly Val Val Leu Asn Gln Ala Phe Gly Gly Leu Leu Val Ala
50 55 60

Val Val Val Lys Tyr Ala Asp Asn Ile Leu Lys Gly Phe Ala Thr Ser
65 70 75 80

Leu Ser Ile Val Leu Ser Thr Val Ala Ser Ile Arg Leu Phe Gly Phe
85 90 95

1070

His Val Asp Pro Leu Phe Ala Leu Gly Ala Gly Leu Val Ile Gly Ala  
 100 105 110

Val Tyr Leu Tyr Ser Leu Pro Arg Gly Ala Xaa Lys Ala Ile Ala Ser  
 115 120 125

Ala Ser Ala Ser Ala Ser Gly Pro Cys Val His Gln Gln Pro Pro Gly  
 130 135 140

Gln Pro Pro Pro Pro Gln Leu Ser Ser His Arg Gly Asp Leu Ile Thr  
 145 150 155 160

Glu Pro Phe Leu Pro Lys Ser Val Leu Val Lys  
 165 170

&lt;210&gt; 1079

&lt;211&gt; 141

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (59)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1079

Arg Arg Val Cys His Ser Ser Pro His Leu Ser Ser Pro Arg Ala Ala  
 1 5 10 15

Cys Glu Gln Gln Ala Val Ala Leu Thr Leu Gln Glu Asp Arg Ala Ser  
 20 25 30

Leu Thr Leu Ser Gly Gly Pro Ser Ala Leu Ala Phe Asp Leu Ser Lys  
 35 40 45

Val Pro Gly Pro Glu Ala Ala Pro Arg Leu Xaa Ala Leu Thr Leu Gly  
 50 55 60

Leu Ala Lys Arg Val Trp Ser Leu Glu Arg Arg Leu Ala Ala Ala Glu  
 65 70 75 80

Glu Thr Ala Val Ser Pro Arg Lys Ser Pro Arg Pro Ala Gly Pro Gln  
 85 90 95

Leu Phe Leu Pro Asp Pro Asp Pro Gln Arg Gly Gly Pro Gly Pro Gly  
 100 105 110

Val Arg Arg Arg Cys Pro Gly Glu Ser Leu Ile Asn Pro Gly Phe Lys  
 115 120 125

1071

Ser Lys Lys Pro Ala Gly Gly Val Asp Phe Asp Glu Thr  
 130 135 140

&lt;210&gt; 1080

&lt;211&gt; 359

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1080

Ala Val Glu Ser Arg Xaa Pro Gly Trp Asn His His Gly Ile Gln Phe  
 1 5 10 15

Pro Cys Gly Ser Val Trp Leu Glu His Ala Ile Ala Met Ile Cys Gly  
 20 25 30

Asn Val Cys Leu Trp Lys Gly Ala Pro Thr Thr Ser Leu Ile Ser Val  
 35 40 45

Ala Val Thr Lys Ile Ile Ala Lys Val Leu Glu Asp Asn Lys Leu Pro  
 50 55 60

Gly Ala Ile Cys Ser Leu Thr Cys Gly Gly Ala Asp Ile Gly Thr Ala  
 65 70 75 80

Met Ala Lys Asp Glu Arg Val Asn Leu Leu Ser Phe Thr Gly Ser Thr  
 85 90 95

Gln Val Gly Lys Gln Val Gly Leu Met Val Gln Glu Arg Phe Gly Arg  
 100 105 110

Ser Leu Leu Glu Leu Gly Gly Asn Asn Ala Ile Ile Ala Phe Glu Asp  
 115 120 125

Ala Asp Leu Ser Leu Val Val Pro Ser Ala Leu Phe Ala Ala Val Gly  
 130 135 140

Thr Ala Gly Gln Arg Cys Thr Thr Ala Arg Arg Leu Phe Ile His Glu  
 145 150 155 160

Ser Ile His Asp Glu Val Val Asn Arg Leu Lys Lys Ala Tyr Ala Gln  
 165 170 175

Ile Arg Val Gly Asn Pro Trp Asp Pro Asn Val Leu Tyr Gly Pro Leu

1072

180	185	190
His Thr Lys Gln Ala Val Ser Met Phe Leu Gly Ala Val Glu Glu Ala		
195	200	205
Lys Lys Glu Gly Gly Thr Val Val Tyr Gly Gly Lys Val Met Asp Arg		
210	215	220
Pro Gly Asn Tyr Val Glu Pro Thr Ile Val Thr Gly Leu Gly His Asp		
225	230	235
Ala Ser Ile Ala His Thr Glu Thr Phe Ala Pro Ile Leu Tyr Val Phe		
245	250	255
Lys Phe Lys Asn Glu Glu Glu Val Phe Ala Trp Asn Asn Glu Val Lys		
260	265	270
Gln Gly Leu Ser Ser Ser Ile Phe Thr Lys Asp Leu Gly Arg Ile Phe		
275	280	285
Arg Trp Leu Gly Pro Lys Gly Ser Asp Cys Gly Ile Val Asn Val Asn		
290	295	300
Ile Pro Thr Ser Gly Ala Glu Ile Gly Gly Ala Phe Gly Gly Glu Lys		
305	310	315
His Thr Gly Gly Gly Arg Glu Ser Gly Ser Asp Ala Trp Lys Gln Tyr		
325	330	335
Met Arg Arg Ser Thr Cys Thr Ile Asn Tyr Ser Lys Asp Leu Pro Leu		
340	345	350
Ala Gln Gly Ile Lys Phe Gln		
355		

&lt;210&gt; 1081

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1081

Ala Val Pro Leu Leu Gly Arg Pro Thr Arg Pro Val Gly Pro Arg Ala
1 5 10 15
Ala Leu Thr Met Thr Gln Gln Gly Ala Ala Leu Gln Asn Tyr Asn Asn
20 25 30
Glu Leu Val Lys Cys Ile Glu Glu Leu Cys Gln Lys Arg Glu Glu Leu
35 40 45

1073

Cys Arg Gln Ile Gln Glu Glu Glu Asp Glu Lys Gln Arg Leu Gln Asn  
           50                          55                          60  
 Glu Val Arg Gln Leu Thr Glu Lys Leu Ala Arg Val Asn Glu Asn Leu  
           65                          70                          75                          80  
 Ala Arg Lys Ile Ala Ser Arg Asn Glu Phe Asp Arg Thr Ile Ala Glu  
                           85                          90                          95  
 Thr Glu Ala Ala Tyr Leu Lys Ile Leu Glu Ser Ser Gln Thr Leu Leu  
                           100                          105                          110  
 Ser Val Leu Lys Arg Glu Ala Gly Asn Leu Thr Lys Ala Thr Ala Pro  
           115                          120                          125  
 Asp Gln Lys Ser Ser Gly Gly Arg Asp Ser  
           130                          135

&lt;210&gt; 1082

&lt;211&gt; 339

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1082

Ser Pro Ile Ser Asn Cys Glu Ile Thr Ile Thr Asp Pro Gly Lys Phe  
           1                          5                          10                          15  
 Tyr Asn Ser Asn Ser Val Phe Ser Arg Gly Asn Met Ala Lys Val Phe  
                           20                          25                          30  
 Ser Phe Ile Leu Val Thr Thr Ala Leu Xaa Met Gly Arg Glu Ile Ser  
           35                          40                          45  
 Ala Leu Glu Asp Cys Ala Gln Glu Gln Met Arg Leu Arg Ala Gln Val  
           50                          55                          60  
 Arg Leu Leu Glu Thr Arg Val Lys Gln Gln Gln Val Lys Ile Lys Gln  
           65                          70                          75                          80  
 Leu Leu Gln Glu Asn Glu Val Gln Phe Leu Asp Lys Gly Asp Glu Asn  
                           85                          90                          95  
 Thr Val Val Asp Leu Gly Ser Lys Arg Gln Tyr Ala Asp Cys Ser Glu



1074

100	105	110
Ile Phe Asn Asp Gly Tyr Lys Leu Ser Gly Phe Tyr Lys Ile Lys Pro		
115	120	125
Leu Gln Ser Pro Ala Glu Phe Ser Val Tyr Cys Asp Met Ser Asp Gly		
130	135	140
Gly Gly Trp Thr Val Ile Gln Arg Arg Ser Asp Gly Ser Glu Asn Phe		
145	150	155
Asn Arg Gly Trp Lys Asp Tyr Glu Asn Gly Phe Gly Asn Phe Val Gln		
	165	170
Lys His Gly Glu Tyr Trp Leu Gly Asn Lys Asn Leu His Phe Leu Thr		
	180	185
Thr Gln Glu Asp Tyr Thr Leu Lys Ile Asp Leu Ala Asp Phe Glu Lys		
	195	200
Asn Ser Arg Tyr Ala Gln Tyr Lys Asn Phe Lys Val Gly Asp Glu Lys		
	210	215
Asn Phe Tyr Glu Leu Asn Ile Gly Glu Tyr Ser Gly Thr Ala Gly Asp		
	225	230
Ser Leu Ala Gly Asn Phe His Pro Glu Val Gln Trp Trp Ala Ser His		
	245	250
Gln Arg Met Lys Phe Ser Thr Trp Asp Arg Asp His Asp Asn Tyr Glu		
	260	265
Gly Asn Cys Ala Glu Glu Asp Gln Ser Gly Trp Trp Phe Asn Arg Cys		
	275	280
His Ser Ala Asn Leu Asn Gly Val Tyr Tyr Ser Gly Pro Tyr Thr Ala		
	290	295
Lys Thr Asp Asn Gly Ile Val Trp Tyr Thr Trp His Gly Trp Trp Tyr		
	305	310
Ser Leu Lys Ser Val Val Met Lys Ile Arg Pro Asn Asp Phe Ile Pro		
	325	330
Asn Val Ile		

&lt;210&gt; 1083

&lt;211&gt; 256

1075

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1083

Lys Ser Leu Asn Gly Pro Ala Asp Phe Glu Lys Arg Val Glu Gly Gly  
 1 5 10 15

Gly Arg Pro Arg Ala Pro Leu Val Asn Ala Leu Leu Thr Ala Pro Glu  
 20 25 30

Phe Leu Ile Tyr Thr Gly Cys Met Val Cys Val Phe Leu Phe Cys Phe  
 35 40 45

Ser Pro Pro Ala Gly Leu Phe Xaa Gly Trp Gly Gly Gly Phe Ala Met  
 50 55 60

Ser Asp Asp Asp Ser Arg Ala Ser Thr Ser Ser Ser Ser Ser Ser  
 65 70 75 80

Ser Asn Gln Gln Thr Glu Lys Glu Thr Asn Thr Pro Lys Lys Lys Glu  
 85 90 95

Ser Lys Val Ser Met Ser Lys Asn Ser Lys Leu Leu Ser Thr Ser Ala  
 100 105 110

Lys Arg Ile Gln Lys Glu Leu Ala Asp Ile Thr Leu Asp Pro Pro Pro  
 115 120 125

Asn Cys Ser Ala Gly Pro Lys Gly Asp Asn Ile Tyr Glu Trp Arg Ser  
 130 135 140

Thr Ile Leu Gly Pro Pro Gly Ser Val Tyr Glu Gly Gly Val Phe Phe  
 145 150 155 160

Leu Asp Ile Thr Phe Thr Pro Glu Tyr Pro Phe Lys Pro Pro Lys Val  
 165 170 175

Thr Phe Arg Thr Arg Ile Tyr His Cys Asn Ile Asn Ser Gln Gly Val  
 180 185 190

Ile Cys Leu Asp Ile Leu Lys Asp Asn Trp Ser Pro Ala Leu Thr Ile  
 195 200 205

Ser Lys Val Leu Leu Ser Ile Cys Ser Leu Leu Thr Asp Cys Asn Pro  
 210 215 220

1076

Ala Asp Pro Leu Val Gly Ser Ile Ala Thr Gln Tyr Met Thr Asn Arg  
 225 230 235 240

Ala Glu His Asp Arg Met Ala Arg Gln Trp Thr Lys Arg Tyr Ala Thr  
 245 250 255

<210> 1084

<211> 176

<212> PRT

<213> Homo sapiens

<400> 1084

Glu Lys Cys Val Ser Phe Ser Ala Val Leu Lys Ser Leu Ser Pro Val  
 1 5 10 15

Asp Pro Val Glu Pro Ile Ser Asn Ser Glu Pro Ser Met Asn Ser Asp  
 20 25 30

Met Gly Lys Val Ser Lys Asn Asp Thr Glu Glu Glu Ser Asn Lys Ser  
 35 40 45

Ala Thr Thr Asp Asn Glu Ile Ser Arg Thr Glu Tyr Leu Cys Glu Asn  
 50 55 60

Ser Leu Glu Gly Lys Asn Lys Asp Asn Ser Ser Asn Glu Val Phe Pro  
 65 70 75 80

Gln Gly Ala Glu Glu Arg Met Cys Tyr Gln Cys Glu Ser Glu Asp Glu  
 85 90 95

Pro Gln Ala Asp Gly Ser Gly Leu Thr Thr Ala Pro Pro Thr Pro Arg  
 100 105 110

Asp Ser Leu Gln Pro Ser Ile Lys Gln Arg Leu Ala Arg Leu Gln Leu  
 115 120 125

Ser Pro Asp Phe Thr Phe Thr Ala Gly Leu Ala Ala Glu Val Ala Ala  
 130 135 140

Arg Ser Leu Ser Phe Thr Thr Met Gln Glu Gln Thr Phe Gly Asp Glu  
 145 150 155 160

Glu Glu Glu Gln Ile Ile Glu Glu Asn Lys Asn Glu Ile Glu Glu Lys  
 165 170 175

1077

&lt;210&gt; 1085

&lt;211&gt; 220

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1085

His Arg Lys Ser Arg Pro Ala Asn His Cys Val Tyr Phe Tyr Gly Asp  
 1 5 10 15

Glu Ile Ser Phe Ser Cys His Glu Thr Ser Arg Phe Ser Ala Ile Cys  
 20 25 30

Gln Gly Asp Gly Thr Trp Ser Pro Arg Thr Pro Ser Cys Gly Asp Ile  
 35 40 45

Cys Asn Phe Pro Pro Lys Ile Ala His Gly His Tyr Lys Gln Ser Ser  
 50 55 60

Ser Tyr Ser Phe Phe Lys Glu Glu Ile Ile Tyr Glu Cys Asp Lys Gly  
 65 70 75 80

Tyr Ile Leu Val Gly Gln Ala Lys Leu Ser Cys Ser Tyr Ser His Trp  
 85 90 95

Ser Ala Pro Ala Pro Gln Cys Lys Ala Leu Cys Arg Lys Pro Glu Leu  
 100 105 110

Val Asn Gly Arg Leu Ser Val Asp Lys Asp Gln Tyr Val Glu Pro Glu  
 115 120 125

Asn Val Thr Ile Gln Cys Asp Ser Gly Tyr Gly Val Val Gly Pro Gln  
 130 135 140

Ser Ile Thr Cys Ser Gly Asn Arg Thr Trp Tyr Pro Glu Val Pro Lys  
 145 150 155 160

Cys Glu Trp Glu Thr Pro Glu Gly Cys Glu Gln Val Leu Thr Gly Lys  
 165 170 175

Arg Leu Met Gln Cys Leu Pro Asn Pro Glu Asp Val Lys Met Ala Leu  
 180 185 190

Glu Val Tyr Lys Leu Ser Leu Glu Ile Glu Gln Leu Glu Leu Gln Arg  
 195 200 205

Asp Ser Ala Arg Gln Ser Thr Leu Asp Lys Glu Leu  
 210 215 220

1078

&lt;210&gt; 1086

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1086

Val Lys Pro Ser Gly Gly Glu Gly Asp Val Ala Gln Arg Pro Arg Asp  
1 5 10 15

Arg Leu Ser Ser Arg Leu Leu Gly Ser Pro Ala Trp Arg Arg Arg Leu  
20 25 30

Met Thr Glu Gly Pro Leu Ala Gly Ala Pro Val Cys Ile Phe Glu Gly  
35 40 45

Pro Gly Pro Pro Gly Gly Ala Gly Ser Tyr Ser Trp Gly Leu Gly Phe  
50 55 60

Arg Arg Ala Gly Gly Gly Ala Gly Leu Lys Ala Ala Leu Val Tyr Gly  
65 70 75 80

Val Val Thr Gln Ser His Trp Gln Arg Trp Gly Leu Ala Val Ala Trp  
85 90 95

Gln Tyr Leu Gly Ile Ala Ser Thr Gly Asn Lys Asp Gly His Glu Gln  
100 105 110

Ser Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
115 120 125

Lys Lys Lys Lys Lys  
130

&lt;210&gt; 1087

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1087

Ile Leu Thr Tyr Lys Met Lys Gln Asp Ala Ser Arg Asn Ala Ala Tyr  
1 5 10 15

Thr Val Asp Cys Glu Asp Tyr Val His Val Val Glu Phe Asn Pro Phe  
20 25 30

Glu Asn Gly Asp Ser Gly Asn Leu Ile Ala Tyr Gly Gly Asn Asn Tyr

1079

35	40	45
Val Val Ile Gly Thr Cys Thr Phe Gln Glu Glu Glu Ala Asp Val Glu		
50	55	60
Gly Ile Gln Tyr Lys Thr Leu Arg Thr Phe His His Gly Val Arg Val		
65	70	75 80
Asp Gly Ile Ala Trp Ser Pro Glu Thr Arg Leu Asp Ser Leu Pro Pro		
	85 90	95
Val Ile Lys Phe Cys Thr Ser Ala Ala Asp Met Lys Ile Arg Leu Phe		
	100 105	110
Thr Ser Asp Leu Gln Asp Lys Asn Glu Tyr Lys Val Leu Glu Gly His		
	115 120	125
Thr Asp Phe Ile Asn Gly Leu Val Phe Asp Pro Lys Glu Gly Gln Glu		
	130 135	140
Ile Ala Ser Val Ser Asp Asp His Thr Cys Arg Ile Trp Asn Leu Glu		
145	150 155	160
Gly Val Gln Thr Ala His Phe Val Leu His Ser Pro Gly Met Ser Val		
	165 170	175
Cys Trp His Pro Glu Glu Thr Phe Lys Leu Met Val Ala Glu Lys Asn		
	180 185	190
Gly Thr Ile Arg Phe Tyr Asp Leu Leu Ala Gln Gln Ala Ile Leu Ser		
	195 200	205
Leu Glu Ser Glu Gln Val Pro Leu Met Ser Ala His Trp Cys Leu Lys		
	210 215	220
Asn Thr Phe Lys Val Gly Ala Val Ala Gly Asn Asp Trp Leu Ile Trp		
225	230 235	240
Asp Ile Thr Arg Ser Ser Tyr Pro Gln Asn Lys Arg Pro Val His Met		
	245 250	255
Asp Arg Ala Cys Leu Phe Arg Trp Ser Thr Ile Ser Glu Asn Leu Phe		
	260 265	270
Ala Thr Thr Gly Tyr Pro Gly Lys Met Gln Ala Ser Phe Lys Phe Ile		
	275 280	285
Ile		

1080

&lt;210&gt; 1088

&lt;211&gt; 836

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (677)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1088

Pro Thr Arg Pro Asn Trp Thr Gly Met Thr Asn Leu Leu Asp Ile Pro  
 1 5 10 15

Gly Leu Ser Ser Leu Ser Asp Thr Met Ile Met Asp Ser Ile Ala Ala  
 20 25 30

Phe Leu Val Leu Pro Asn Arg Leu Leu Val Pro Leu Val Pro Asp Leu  
 35 40 45

Gln Asp Val Ala Gln Leu Arg Ser Pro Leu Pro Arg Gly Ile Ile Arg  
 50 55 60

Ile His Leu Leu Ala Ala Arg Gly Leu Ser Ser Lys Asp Lys Tyr Val  
 65 70 75 80

Lys Gly Leu Ile Glu Gly Lys Ser Asp Pro Tyr Ala Leu Val Arg Leu  
 85 90 95

Gly Thr Gln Thr Phe Cys Ser Arg Val Ile Asp Glu Glu Leu Asn Pro  
 100 105 110

Gln Trp Gly Glu Thr Tyr Glu Val Met Val His Glu Val Pro Gly Gln  
 115 120 125

Glu Ile Glu Val Glu Val Phe Asp Lys Asp Pro Asp Lys Asp Asp Phe  
 130 135 140

Leu Gly Arg Met Lys Leu Asp Val Gly Lys Val Leu Gln Ala Ser Val  
 145 150 155 160

Leu Asp Asp Trp Phe Pro Leu Gln Gly Gly Gln Gly Gln Val His Leu  
 165 170 175

Arg Leu Glu Trp Leu Ser Leu Leu Ser Asp Ala Glu Lys Leu Glu Gln  
 180 185 190

Val Leu Gln Trp Asn Trp Gly Val Ser Ser Arg Pro Asp Pro Pro Ser  
 195 200 205

1081

Ala Ala Ile Leu Val Val Tyr Leu Asp Arg Ala Gln Asp Leu Pro Leu  
 210 215 220

Lys Lys Gly Asn Lys Glu Pro Asn Pro Met Val Gln Leu Ser Ile Gln  
 225 230 235 240

Asp Val Thr Gln Glu Ser Lys Ala Val Tyr Ser Thr Asn Cys Pro Val  
 245 250 255

Trp Glu Glu Ala Phe Arg Phe Phe Leu Gln Asp Pro Gln Ser Gln Glu  
 260 265 270

Leu Asp Val Gln Val Lys Asp Asp Ser Arg Ala Leu Thr Leu Gly Ala  
 275 280 285

Leu Thr Leu Pro Leu Ala Arg Leu Leu Thr Ala Pro Glu Leu Ile Leu  
 290 295 300

Asp Gln Trp Phe Gln Leu Ser Ser Ser Gly Pro Asn Ser Arg Leu Tyr  
 305 310 315 320

Met Lys Leu Val Met Arg Ile Leu Tyr Leu Asp Ser Ser Glu Ile Cys  
 325 330 335

Phe Pro Thr Val Pro Gly Cys Pro Gly Ala Trp Asp Val Asp Ser Glu  
 340 345 350

Asn Pro Gln Arg Gly Ser Ser Val Asp Ala Pro Pro Arg Pro Cys His  
 355 360 365

Thr Thr Pro Asp Ser Gln Phe Gly Thr Glu His Val Leu Arg Ile His  
 370 375 380

Val Leu Glu Ala Gln Asp Leu Ile Ala Lys Asp Arg Phe Leu Gly Gly  
 385 390 395 400

Leu Val Lys Gly Lys Ser Asp Pro Tyr Val Lys Leu Lys Leu Ala Gly  
 405 410 415

Arg Ser Phe Arg Ser His Val Val Arg Glu Asp Leu Asn Pro Arg Trp  
 420 425 430

Asn Glu Val Phe Glu Val Ile Val Thr Ser Val Pro Gly Gln Glu Leu  
 435 440 445

Glu Val Glu Val Phe Asp Lys Asp Leu Asp Lys Asp Asp Phe Leu Gly  
 450 455 460

Arg Cys Lys Val Arg Leu Thr Thr Val Leu Asn Ser Gly Phe Leu Asp  
 465 470 475 480



1082

Glu Trp Leu Thr Leu Glu Asp Val Pro Ser Gly Arg Leu His Leu Arg  
 485 490 495

Leu Glu Arg Leu Thr Pro Arg Pro Thr Ala Ala Glu Leu Glu Glu Val  
 500 505 510

Leu Gln Val Asn Ser Leu Ile Gln Thr Gln Lys Ser Ala Glu Leu Ala  
 515 520 525

Ala Ala Leu Leu Ser Ile Tyr Met Glu Arg Ala Glu Asp Leu Pro Leu  
 530 535 540

Arg Lys Gly Thr Lys His Leu Ser Pro Tyr Ala Thr Leu Thr Val Gly  
 545 550 555 560

Asp Ser Ser His Lys Thr Lys Thr Ile Ser Gln Thr Ser Ala Pro Val  
 565 570 575

Trp Asp Glu Ser Ala Ser Phe Leu Ile Arg Lys Pro His Thr Glu Ser  
 580 585 590

Leu Glu Leu Gln Val Arg Gly Glu Gly Thr Gly Val Leu Gly Ser Leu  
 595 600 605

Ser Leu Pro Leu Ser Glu Leu Leu Val Ala Asp Gln Leu Cys Leu Asp  
 610 615 620

Arg Trp Phe Thr Leu Ser Ser Gly Gln Gly Gln Val Leu Leu Arg Ala  
 625 630 635 640

Gln Leu Gly Ile Leu Val Ser Gln His Ser Gly Val Glu Ala His Ser  
 645 650 655

His Ser Tyr Ser His Ser Ser Ser Ser Leu Ser Glu Glu Pro Glu Leu  
 660 665 670

Ser Gly Gly Pro Xaa His Ile Thr Ser Ser Ala Pro Glu Leu Arg Gln  
 675 680 685

Arg Leu Thr His Val Asp Ser Pro Leu Glu Ala Pro Ala Gly Pro Leu  
 690 695 700

Gly Gln Val Lys Leu Thr Leu Trp Tyr Tyr Ser Glu Glu Arg Lys Leu  
 705 710 715 720

Val Ser Ile Val His Gly Cys Arg Ser Leu Arg Gln Asn Gly Arg Asp  
 725 730 735

Pro Pro Asp Pro Tyr Val Ser Leu Leu Leu Leu Pro Asp Lys Asn Arg  
 740 745 750

1083

Gly	Thr	Lys	Arg	Arg	Thr	Ser	Gln	Lys	Lys	Arg	Thr	Leu	Ser	Pro	Glu
755						760						765			
Phe	Asn	Glu	Arg	Phe	Glu	Trp	Glu	Leu	Pro	Leu	Asp	Glu	Ala	Gln	Arg
770						775						780			
Arg	Lys	Leu	Asp	Val	Ser	Val	Lys	Ser	Asn	Ser	Ser	Phe	Met	Ser	Arg
785						790						795			
Glu	Arg	Glu	Leu	Leu	Gly	Lys	Val	Gln	Leu	Asp	Leu	Ala	Glu	Thr	Asp
805						810						815			
Leu	Ser	Gln	Gly	Val	Ala	Arg	Trp	Tyr	Asp	Leu	Met	Asp	Asn	Lys	Asp
820						825						830			
Lys	Gly	Ser	Ser												
835															

<210> 1089

<211> 409

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (65)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (393)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

**<222> (406)**

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1089

Arg Ser Ser Val Ala Ser Val His Thr Trp Arg Gln Arg Arg Gln Val  
1 5 10 15

Xaa Val Phe Val Leu Pro Ser Thr Ala Asn Met Lys Arg Pro Lys Leu  
20 25 30

1084

Lys Lys Ala Ser Lys Arg Met Thr Cys His Lys Arg Tyr Lys Ile Gln  
 35 40 45  
 Lys Lys Val Arg Glu His His Arg Lys Leu Arg Lys Glu Ala Lys Lys  
 50 55 60  
 Xaa Gly His Lys Lys Pro Arg Lys Asp Pro Gly Val Pro Asn Ser Ala  
 65 70 75 80  
 Pro Phe Lys Glu Ala Leu Leu Arg Glu Ala Glu Leu Arg Lys Gln Arg  
 85 90 95  
 Leu Glu Glu Leu Lys Gln Gln Gln Lys Leu Asp Arg Gln Lys Glu Leu  
 100 105 110  
 Glu Lys Lys Arg Lys Leu Glu Thr Asn Pro Asp Ile Lys Pro Ser Asn  
 115 120 125  
 Val Glu Pro Met Glu Lys Glu Phe Gly Leu Cys Lys Thr Glu Asn Lys  
 130 135 140  
 Ala Lys Ser Gly Lys Gln Asn Ser Lys Lys Leu Tyr Cys Gln Glu Leu  
 145 150 155 160  
 Lys Lys Val Ile Glu Ala Ser Asp Val Val Leu Glu Val Leu Asp Ala  
 165 170 175  
 Arg Asp Pro Leu Gly Cys Arg Cys Pro Gln Val Glu Glu Ala Ile Val  
 180 185 190  
 Gln Ser Gly Gln Lys Lys Leu Val Leu Ile Leu Asn Lys Ser Asp Leu  
 195 200 205  
 Val Pro Lys Glu Asn Leu Glu Ser Trp Leu Asn Tyr Leu Lys Lys Glu  
 210 215 220  
 Leu Pro Thr Val Val Phe Arg Ala Ser Thr Lys Pro Lys Asp Lys Gly  
 225 230 235 240  
 Lys Ile Thr Lys Arg Val Lys Ala Lys Lys Asn Ala Ala Pro Phe Arg  
 245 250 255  
 Ser Glu Val Cys Phe Gly Lys Glu Gly Leu Trp Lys Leu Leu Gly Gly  
 260 265 270  
 Phe Gln Glu Thr Cys Ser Lys Ala Ile Arg Val Gly Val Ile Gly Phe  
 275 280 285  
 Pro Asn Val Gly Lys Ser Ser Ile Ile Asn Ser Leu Lys Gln Glu Gln  
 290 295 300

1085

Met Cys Asn Val Gly Val Ser Met Gly Leu Thr Arg Ser Met Gln Val  
 305 310 315 320  
 Val Pro Leu Asp Lys Gln Ile Thr Ile Ile Asp Ser Pro Ser Phe Ile  
 325 330 335  
 Val Ser Pro Leu Asn Ser Ser Ser Ala Leu Ala Leu Arg Ser Pro Ala  
 340 345 350  
 Ser Ile Glu Val Val Lys Pro Met Glu Ala Ala Ser Ala Ile Leu Ser  
 355 360 365  
 Gln Ala Asp Ala Arg Gln Val Val Leu Lys Tyr Thr Val Pro Gly Tyr  
 370 375 380  
 Arg Asn Ser Leu Gly Ile Phe Tyr Xaa Ala Cys Ser Glu Lys Arg Tyr  
 385 390 395 400  
 Ala Pro Lys Arg Trp Xaa Pro Lys Cys  
 405

&lt;210&gt; 1090

&lt;211&gt; 161

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1090

Pro Lys Asn Trp Xaa Thr Ala Arg Ala Asp His His Ala Ser Met Asn  
 1 5 10 15

Trp Val Pro Cys Gly His Ser Tyr Phe Gly Ala Thr Leu Asn Ser Phe  
 20 25 30

Ile His Val Leu Met Tyr Ser Tyr Tyr Gly Leu Ser Ser Val Pro Ser  
 35 40 45

Met Arg Pro Tyr Leu Trp Trp Xaa Glu Val His His Ser Gly Ala Ala  
 50 55 60

1086

Ala Ser Val Cys Ala Asp Asn His Pro Asp Gln Leu Arg Gly His Leu  
65 70 75 80

Ala Val His Ile Pro Ser Trp Leu Val Val Phe Pro Asp Trp Ile His  
85 90 95

Asp Phe Pro Asp Cys Ser Leu His Lys Leu Leu His Ser Asp Leu Gln  
100 105 110

Gln Glu Arg Gly Leu Pro Lys Glu Arg Pro Pro Glu Gly Pro Pro Glu  
115 120 125

Trp Val His Gly Cys Cys Glu Trp Thr His Gln Gln Leu Phe Thr Pro  
130 135 140

Gly Lys Gln Cys Glu Ala Lys Glu Ala Ala Glu Gly Leu Lys Ser Lys  
145 150 155 160

Asn

&lt;210&gt; 1091

&lt;211&gt; 118

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1091

Ser Lys Asn Ser Ala Arg Glu Glu Met Ala Ala Ser Ser Ser Ser Ser  
1 5 10 15

Ser Ala Gly Gly Val Ser Gly Ser Ser Val Thr Gly Ser Gly Phe Ser  
20 25 30

Val Ser Asp Leu Ala Pro Pro Arg Lys Ala Leu Phe Thr Tyr Pro Lys  
35 40 45

Gly Ala Gly Glu Met Leu Glu Asp Gly Ser Glu Arg Phe Leu Cys Glu  
50 55 60

Ser Val Phe Ser Tyr Gln Val Ala Ser Thr Leu Lys Gln Val Lys His  
65 70 75 80

Asp Gln Gln Val Ala Arg Met Glu Lys Leu Ala Gly Leu Val Glu Glu  
85 90 95

Leu Glu Ala Asp Glu Trp Arg Phe Lys Pro Ile Glu Gln Leu Leu Gly  
100 105 110

1087

Phe Thr Pro Ser Ser Gly  
115

&lt;210&gt; 1092

&lt;211&gt; 198

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1092

Ala Pro Phe Leu Ala Ala Gly Val Ser Met Gly Gly Met Leu Leu Leu  
1 5 10 15

Asn Tyr Leu Gly Lys Ile Gly Ser Lys Thr Pro Leu Met Ala Ala Ala  
20 25 30

Thr Phe Ser Val Gly Trp Asn Thr Phe Ala Cys Ser Glu Ser Leu Glu  
35 40 45

Lys Pro Leu Asn Trp Leu Leu Phe Asn Tyr Tyr Leu Thr Thr Cys Leu  
50 55 60

Gln Ser Ser Val Asn Lys His Arg His Met Phe Val Lys Gln Val Asp  
65 70 75 80

Met Asp His Val Met Lys Ala Lys Ser Ile Arg Glu Phe Asp Lys Arg  
85 90 95

Phe Thr Ser Val Met Phe Gly Tyr Gln Thr Ile Asp Asp Tyr Tyr Thr  
100 105 110

Asp Ala Ser Pro Ser Pro Arg Leu Lys Ser Val Gly Ile Pro Val Leu  
115 120 125

Cys Leu Asn Ser Val Asp Asp Val Phe Ser Pro Ser His Ala Ile Pro  
130 135 140

Ile Glu Thr Ala Lys Gln Asn Pro Asn Val Ala Leu Val Leu Thr Ser  
145 150 155 160

Tyr Gly Gly His Ile Gly Phe Leu Glu Gly Ile Trp Pro Arg Gln Ser  
165 170 175

Thr Tyr Met Asp Arg Val Phe Lys Gln Phe Val Gln Ala Met Val Glu  
180 185 190

His Gly His Glu Leu Ser  
195

1088

&lt;210&gt; 1093

&lt;211&gt; 36

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1093

Pro Gly Trp Ser Arg Ser Pro Gly Trp Ser Arg Ser Pro Gly Trp Ser  
1 5 10 15

Arg Ser Pro Asp Val Val Ile His Pro Pro Arg Pro Pro Lys Met Leu  
20 25 30

Gly Leu Gln Val  
35

&lt;210&gt; 1094

&lt;211&gt; 615

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (113)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (132)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (155)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (156)

1089

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (157)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1094

Tyr Xaa Gln Leu Val Leu Leu Gln Val Pro Val Arg Ile Pro Gly Ser  
 1 5 10 15

Thr His Ala Ser Xaa Asp Ala Trp Val Ala Arg Gln Leu Ala Lys Pro  
 20 25 30

Asp Asn Thr Leu Phe Val Asn Arg Thr Leu Phe Asp Gln Val Leu Glu  
 35 40 45

Phe Leu Cys Ser Pro Asp Asp Asp Ser Arg His Ser Glu Arg Gln Gln  
 50 55 60

Val Leu Leu Glu Leu Leu Gln Ala Gly Gly Ile Val Gln Phe Glu Glu  
 65 70 75 80

Ser Arg Leu Ile Arg Met Ala Glu Lys Ala Glu Phe Tyr Gln Ile Cys  
 85 90 95

Glu Phe Met Tyr Glu Arg Glu His Gln Tyr Asp Lys Ile Ile Asp Cys  
 100 105 110

Xaa Leu Arg Asp Pro Leu Arg Glu Glu Glu Val Phe Asn Tyr Ile His  
 115 120 125

Asn Ile Leu Xaa Ile Pro Gly His Ser Ala Glu Glu Lys Gln Ser Val  
 130 135 140

Trp Gln Lys Ala Met Asp His Ile Glu Glu Xaa Xaa Xaa Leu Lys Pro  
 145 150 155 160

Cys Lys Ala Ala Glu Leu Val Ala Thr His Phe Ser Gly His Ile Glu  
 165 170 175

Thr Val Ile Lys Lys Leu Gln Asn Gln Val Leu Leu Phe Lys Phe Leu  
 180 185 190

Arg Ser Leu Leu Asp Pro Arg Glu Gly Ile His Val Asn Gln Glu Leu  
 195 200 205

Leu Gln Ile Ser Pro Cys Ile Thr Glu Gln Phe Ile Glu Leu Leu Cys  
 210 215 220

Gln Phe Asn Pro Thr Gln Val Ile Glu Thr Leu Gln Val Leu Glu Cys



1090

225		230		235		240									
Tyr	Arg	Leu	Glu	Glu	Thr	Ile	Gln	Ile	Thr	Gln	Lys	Tyr	Gln	Leu	His
				245					250					255	
Glu	Val	Thr	Ala	Tyr	Leu	Leu	Glu	Lys	Lys	Gly	Asp	Ile	His	Gly	Ala
			260					265					270		
Phe	Leu	Ile	Met	Leu	Glu	Arg	Leu	Gln	Ser	Lys	Leu	Gln	Glu	Val	Thr
		275					280					285			
His	Gln	Gly	Glu	Asn	Thr	Lys	Glu	Asp	Pro	Ser	Leu	Lys	Asp	Val	Glu
	290					295					300				
Asp	Thr	Met	Val	Glu	Thr	Ile	Ala	Leu	Cys	Gln	Arg	Asn	Ser	His	Asn
305					310					315				320	
Leu	Asn	Gln	Gln	Gln	Arg	Glu	Ala	Leu	Trp	Phe	Pro	Leu	Leu	Glu	Ala
				325					330					335	
Met	Met	Ala	Pro	Gln	Lys	Leu	Ser	Ser	Ser	Ala	Ile	Pro	His	Leu	His
			340					345					350		
Ser	Glu	Ala	Leu	Lys	Ser	Leu	Thr	Met	Gln	Val	Leu	Asn	Ser	Met	Ala
		355					360					365			
Ala	Phe	Ile	Ala	Leu	Pro	Ser	Ile	Leu	Gln	Arg	Ile	Leu	Gln	Asp	Pro
	370					375					380				
Val	Tyr	Gly	Lys	Gly	Lys	Leu	Gly	Glu	Ile	Gln	Gly	Leu	Ile	Leu	Gly
385					390					395				400	
Met	Leu	Asp	Thr	Phe	Asn	Tyr	Glu	Gln	Thr	Leu	Leu	Glu	Thr	Thr	Thr
				405					410					415	
Ser	Leu	Leu	Asn	Gln	Asp	Leu	His	Trp	Ser	Leu	Cys	Asn	Leu	Arg	Ala
			420					425					430		
Ser	Val	Thr	Arg	Gly	Leu	Asn	Pro	Lys	Gln	Asp	Tyr	Cys	Ser	Ile	Cys
		435					440					445			
Leu	Gln	Gln	Tyr	Lys	Arg	Arg	Gln	Glu	Met	Ala	Asp	Glu	Ile	Ile	Val
	450					455					460				
Phe	Ser	Cys	Gly	His	Leu	Tyr	His	Ser	Phe	Cys	Leu	Gln	Asn	Lys	Glu
465					470					475				480	
Cys	Thr	Val	Glu	Phe	Glu	Gly	Gln	Thr	Arg	Trp	Thr	Cys	Tyr	Lys	Cys
				485					490					495	
Ser	Ser	Ser	Asn	Lys	Val	Gly	Lys	Leu	Ser	Glu	Asn	Ser	Ser	Glu	Ile

1091

500	505	510
Lys Lys Gly Arg Ile Thr Pro Ser Gln Val Lys Met Ser Pro Ser Tyr		
515	520	525
His Gln Ser Lys Gly Asp Pro Thr Ala Lys Lys Gly Thr Ser Glu Pro		
530	535	540
Val Leu Asp Pro Gln Gln Ile Gln Ala Phe Asp Gln Leu Cys Arg Leu		
545	550	555
Tyr Arg Gly Ser Ser Arg Leu Ala Leu Leu Thr Glu Leu Ser Gln Asn		
565	570	575
Arg Ser Ser Glu Ser Tyr Arg Pro Phe Ser Gly Ser Gln Ser Ala Pro		
580	585	590
Ala Phe Asn Ser Ile Phe Gln Asn Glu Asn Phe Gln Leu Gln Leu Ile		
595	600	605
Pro Pro Pro Val Thr Glu Asp		
610	615	

&lt;210&gt; 1095

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1095

Trp Xaa Ser Thr Thr Ile Trp Lys Ala Gly Pro Pro Ala Gly Thr Gly
1 5 10 15

Pro Glu Phe Pro Gly Arg Pro Thr Arg Pro Xaa Thr Arg Gly Phe Trp
20 25 30

Phe Cys Ser Ser Val Trp Val Ser Ser Arg Leu Leu Lys Met Asn Arg
35 40 45

Leu Phe Gly Lys Ala Lys Pro Lys Ala Pro Pro Pro Ser Leu Thr Asp
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1092

50	55	60
Cys Ile Gly Thr Val Asp Ser Arg Ala Glu Ser Ile Asp Lys Lys Ile		
65	70	75 80
Ser Arg Leu Asp Ala Glu Leu Val Lys Tyr Lys Asp Gln Ile Lys Lys		
	85	90 95
Met Arg Glu Gly Pro Ala Lys Asn Met Val Lys Gln Lys Ala Leu Arg		
	100	105 110
Val Leu Lys Gln Lys Arg Met Tyr Glu Gln Gln Arg Asp Asn Leu Ala		
	115	120 125
Gln Gln Ser Phe Asn Met Glu Gln Ala Asn Tyr Thr Ile Gln Ser Leu		
	130	135 140
Lys Asp Thr Lys Thr Thr Val Asp Ala Met Lys Leu Gly Val Lys Glu		
	145	150 155 160
Met Lys Lys Ala Tyr Lys Gln Val Lys Ile Asp Gln Ile Glu Asp Leu		
	165	170 175
Gln Asp Gln Leu Glu Asp Met Met Glu Asp Ala Asn Glu Ile Gln Glu		
	180	185 190
Ala Leu Ser Arg Ser Tyr Gly Thr Pro Glu Leu Asp Glu Asp Asp Leu		
	195	200 205
Glu Ala Glu Leu Asp Ala Leu Gly Asp Glu Leu Leu Ala Asp Glu Asp		
	210	215 220
Ser Ser Tyr Leu Asp Glu Ala Ala Ser Ala Pro Ala Ile Pro Glu Gly		
	225	230 235 240
Val Pro Thr Asp Thr Lys Asn Lys Asp Gly Val Leu Val Asp Glu Phe		
	245	250 255
Gly Leu Pro Gln Ile Pro Ala Ser		
	260	

&lt;210&gt; 1096

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1096

Ser Cys Cys Phe Leu Lys Arg Leu Gln Ala Ser Phe Pro Arg Thr Ala
1 5 10 15

1093

Val Ser Phe Glu Pro Leu Ala Gly Asp Met Pro Arg Gly Arg Lys Ser  
                   20                  25                  30  
 Arg Arg Arg Arg Asn Ala Arg Ala Ala Glu Glu Asn Arg Asn Asn Arg  
                   35                  40                  45  
 Lys Ile Gln Ala Ser Glu Ala Ser Glu Thr Pro Met Ala Ala Ser Val  
                   50                  55                  60  
 Val Ala Ser Thr Pro Glu Asp Asp Leu Ser Gly Pro Glu Glu Asp Pro  
                   65                  70                  75                  80  
 Ser Thr Pro Glu Glu Ala Ser Thr Thr Pro Glu Glu Ala Ser Ser Thr  
                   85                  90                  95  
 Ala Gln Ala Gln Lys Pro Ser Val Pro Arg Ser Asn Phe Gln Gly Thr  
                   100                  105                  110  
 Lys Lys Ser Leu Leu Met Ser Ile Leu Ala Leu Ile Phe Ile Met Gly  
                   115                  120                  125  
 Asn Ser Ala Lys Glu Ala Leu Val Trp Lys Val Leu Gly Lys Leu Gly  
                   130                  135                  140  
 Met Gln Pro Gly Arg Gln His Ser Ile Phe Gly Asp Pro Lys Lys Ile  
                   145                  150                  155                  160  
 Val Thr Glu Glu Phe Val Arg Arg Gly Tyr Leu Ile Tyr Lys Pro Val  
                   165                  170                  175  
 Pro Arg Ser Ser Pro Val Glu Tyr Glu Phe Phe Trp Gly Pro Arg Ala  
                   180                  185                  190  
 His Val Glu Ser Ser Lys Leu Lys Val Met His Phe Val Ala Arg Val  
                   195                  200                  205  
 Arg Asn Arg Cys Ser Lys Asp Trp Pro Cys Asn Tyr Asp Trp Asp Ser  
                   210                  215                  220  
 Asp Asp Asp Ala Glu Val Glu Ala Ile Leu Asn Ser Gly Ala Arg Gly  
                   225                  230                  235                  240  
 Tyr Ser Ala Pro

&lt;210&gt; 1097

&lt;211&gt; 132

&lt;212&gt; PRT

1094

&lt;213&gt; Homo sapiens

&lt;400&gt; 1097

Ala Thr Met Val Arg Met Asn Val Leu Ala Asp Ala Leu Lys Ser Ile  
 1 5 10 15

Asn Asn Ala Glu Lys Arg Gly Lys Arg Gln Val Leu Ile Arg Pro Cys  
 20 25 30

Ser Lys Val Ile Val Arg Phe Leu Thr Val Met Met Lys His Gly Tyr  
 35 40 45

Ile Gly Glu Phe Glu Ile Ile Asp Asp His Arg Ala Gly Lys Ile Val  
 50 55 60

Val Asn Leu Thr Gly Arg Leu Asn Lys Cys Gly Val Ile Ser Pro Arg  
 65 70 75 80

Phe Asp Val Gln Leu Lys Asp Leu Glu Lys Trp Gln Asn Asn Leu Leu  
 85 90 95

Pro Ser Arg Gln Phe Gly Phe Ile Val Leu Thr Thr Ser Ala Gly Ile  
 100 105 110

Met Asp His Glu Glu Ala Arg Arg Lys His Thr Gly Gly Lys Ile Leu  
 115 120 125

Gly Phe Phe Phe  
 130

&lt;210&gt; 1098

&lt;211&gt; 371

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (186)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1098

Ala Arg His Thr Pro Ala Gln Arg His Asp His Pro Gln Glu Gly Asn  
 1 5 10 15

1095

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Ile Pro Val Cys Val Gln Leu Ala Val Cys Ala Leu Pro Leu Pro Val
      20              25              30

Val Pro Gly Pro Glu His Cys Gly Pro Gln Arg Xaa Leu Gln Pro Leu
      35              40              45

Val Tyr Pro Leu Ala Gln Val Ile Ile Gly Cys Ile Lys Leu Ile Pro
      50              55              60

Thr Ala Arg Phe Tyr Pro Leu Arg Met His Cys Ile Arg Ala Leu Thr
      65              70              75              80

Leu Leu Ser Gly Ser Ser Gly Ala Phe Ile Pro Val Leu Pro Phe Ile
      85              90              95

Leu Glu Met Phe Gln Gln Val Asp Phe Asn Arg Lys Pro Gly Arg Met
      100             105             110

Ser Ser Lys Pro Ile Asn Phe Ser Val Ile Leu Lys Leu Ser Asn Val
      115             120             125

Asn Leu Gln Glu Lys Ala Tyr Arg Asp Gly Leu Val Glu Gln Leu Tyr
      130             135             140

Asp Leu Thr Leu Glu Tyr Leu His Ser Gln Ala His Cys Ile Gly Phe
      145             150             155             160

Pro Glu Leu Val Leu Pro Val Val Leu Gln Leu Lys Ser Phe Leu Arg
      165             170             175

Glu Cys Lys Val Ala Asn Tyr Cys Arg Xaa Val Gln Gln Leu Leu Gly
      180             185             190

Lys Val Gln Glu Asn Ser Ala Tyr Ile Cys Ser Arg Arg Gln Arg Val
      195             200             205

Ser Phe Gly Val Ser Glu Gln Gln Ala Val Glu Ala Trp Glu Lys Leu
      210             215             220

Thr Arg Glu Glu Gly Thr Pro Leu Thr Leu Tyr Tyr Ser His Trp Arg
      225             230             235             240

Lys Leu Arg Asp Arg Glu Ile Gln Leu Glu Ile Ser Gly Lys Glu Arg
      245             250             255

Leu Glu Asp Leu Asn Phe Pro Glu Ile Lys Arg Arg Lys Met Ala Asp
      260             265             270

Arg Lys Asp Glu Asp Arg Lys Gln Phe Lys Asp Leu Phe Asp Leu Asn
      275             280             285

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1096

Ser Ser Glu Glu Asp Asp Thr Glu Gly Phe Ser Glu Arg Gly Ile Leu  
 290 295 300  
 Arg Pro Leu Ser Thr Arg His Gly Val Glu Asp Asp Glu Glu Asp Glu  
 305 310 315 320  
 Glu Glu Gly Glu Glu Asp Ser Ser Asn Ser Glu Gly Glu Trp Ser Trp  
 325 330 335  
 Asp Gly Asp Pro Asp Ala Glu Ala Gly Leu Ala Pro Gly Glu Leu Gln  
 340 345 350  
 Gln Leu Ala Gln Gly Pro Glu Asp Glu Leu Glu Asp Leu Gln Leu Ser  
 355 360 365  
 Glu Asp Asp  
 370

&lt;210&gt; 1099

&lt;211&gt; 321

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1099

Glu Arg Thr Leu Gly Gln Pro Gly Phe Leu Gly Cys Pro Arg Gln Pro  
 1 5 10 15  
 His Thr Ala Met His Tyr Pro Thr Ala Leu Leu Phe Leu Ile Leu Ala  
 20 25 30  
 Asn Gly Ala Gln Ala Phe Arg Ile Cys Ala Phe Asn Ala Gln Arg Leu  
 35 40 45  
 Thr Leu Ala Lys Val Ala Arg Glu Gln Val Met Asp Thr Leu Val Arg  
 50 55 60  
 Ile Leu Ala Arg Cys Asp Ile Met Val Leu Gln Glu Val Val Asp Ser  
 65 70 75 80  
 Ser Gly Ser Ala Ile Pro Leu Leu Leu Arg Glu Leu Asn Arg Phe Asp  
 85 90 95  
 Gly Ser Gly Pro Tyr Ser Thr Leu Ser Ser Pro Gln Leu Gly Arg Ser  
 100 105 110  
 Thr Tyr Met Glu Thr Tyr Val Tyr Phe Tyr Arg Ser His Lys Thr Gln  
 115 120 125  
 Val Leu Ser Ser Tyr Val Tyr Asn Asp Glu Asp Asp Val Phe Ala Arg

1097

130		135		140
Glu Pro Phe Val Ala Gln Phe Ser Leu Pro Ser Asn Val Leu Pro Ser				
145		150		160
Leu Val Leu Val Pro Leu His Thr Thr Pro Lys Ala Val Glu Lys Glu				
	165		170	175
Leu Asn Ala Leu Tyr Asp Val Phe Leu Glu Val Ser Gln His Trp Gln				
	180		185	190
Ser Lys Asp Val Ile Leu Leu Gly Asp Phe Asn Ala Asp Cys Ala Ser				
	195		200	205
Leu Thr Lys Lys Arg Leu Asp Lys Leu Glu Leu Arg Thr Glu Pro Gly				
	210		215	220
Phe His Trp Val Ile Ala Asp Gly Glu Asp Thr Thr Val Arg Ala Ser				
	225		230	235
Thr His Cys Thr Tyr Asp Arg Val Val Leu His Gly Glu Arg Cys Arg				
	245		250	255
Ser Leu Leu His Thr Ala Ala Ala Phe Asp Phe Pro Thr Ser Phe Gln				
	260		265	270
Leu Thr Glu Glu Glu Ala Leu Asn Ile Ser Asp His Tyr Pro Val Glu				
	275		280	285
Val Glu Leu Lys Leu Ser Gln Ala His Ser Val Gln Pro Leu Ser Leu				
	290		295	300
Thr Val Leu Leu Leu Leu Ser Leu Leu Ser Pro Gln Leu Cys Pro Ala				
	305		310	315
				320
Ala				

&lt;210&gt; 1100

&lt;211&gt; 60

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1100

Leu Leu Leu Cys Val Phe Tyr Ile Ala Cys Phe Cys Lys Asn Met Leu
1 5 10 15

Gly Asp Glu Arg Leu Val Leu Glu Arg Lys Cys Ser Ser Val Gln Arg
20 25 30



1098

Met His Phe Leu Pro Leu Ile Leu Glu Lys Thr Phe Thr Val Ile Tyr  
35 40 45

Met Val Phe Cys Lys Arg Thr Ile Asn Arg Thr Phe  
50 55 60

<210> 1101

<211> 254

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (162)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (170)

<223> Xaa equals any of the naturally occurring L-amino acids

**<400> 1101**

Phe Gly Thr Ser Tyr Ile Gly Gly Leu Leu Ser Ala Phe Tyr Leu Thr  
1 5 10 15

Gly Glu Glu Val Phe Arg Ile Lys Ala Ile Arg Leu Gly Glu Lys Leu  
20 25 30

Leu Pro Ala Phe Asn Thr Pro Thr Gly Ile Pro Lys Gly Val Val Ser  
35 40 45

Phe Lys Ser Gly Asn Trp Gly Trp Ala Thr Ala Gly Ser Ser Ser Ile  
50 55 60

Leu Ala Glu Phe Gly Ser Leu His Leu Glu Phe Leu His Leu Thr Glu  
65 70 75 80

Leu Ser Gly Asn Gln Val Phe Ala Glu Lys Val Arg Asn Ile Arg Lys  
85 90 95

Val Leu Arg Lys Ile Glu Lys Pro Phe Gly Leu Tyr Pro Asn Phe Leu  
100 105 110

Ser Pro Val Ser Gly Asn Trp Val Gln His His Val Ser Val Gly Gly  
115 120 125

Leu Gly Asp Ser Phe Tyr Glu Tyr Leu Ile Lys Ser Trp Leu Met Ser  
130 135 140

1099

Gly Lys Thr Asp Met Glu Ala Lys Asn Met Tyr Tyr Glu Ala Leu Glu  
 145 150 155 160

Ala Xaa Arg Asp Leu Leu Ala Glu Cys Xaa Ser Arg Gly Ala Asp Leu  
 165 170 175

His Cys Arg Val Ala Arg Gly Asp Ser Gly Pro Gln Asp Gly Ala Pro  
 180 185 190

Gly Leu Phe Leu Arg Gly His Asp Arg Pro Trp Pro Glu Asp Ala Lys  
 195 200 205

Glu Glu Lys Arg Ala His Tyr Arg Glu Leu Ala Ala Gln Ile Thr Lys  
 210 215 220

Thr Cys His Glu Ser Tyr Ala Arg Ser Asp Thr Lys Leu Gly Pro Glu  
 225 230 235 240

Ala Ser Gly Leu Thr Pro Ala Glu Arg Pro Trp Pro Pro Ser  
 245 250

<210> 1102

<211> 233

<212> PRT

<213> Homo sapiens

<400> 1102

Gly Pro Gly Trp Tyr Pro Ala Pro Leu Arg Leu Phe His Ser Asp Pro  
 1 5 10 15

Trp Gly His Ala Gln Pro Gly Ala Lys Arg His Arg Ile Pro Glu Pro  
 20 25 30

Glu Ala Ala Val Leu Phe Arg Gln Met Ala Thr Ala Leu Ala His Cys  
 35 40 45

His Gln His Gly Leu Val Leu Arg Asp Leu Lys Leu Cys Arg Phe Val  
 50 55 60

Phe Ala Asp Arg Glu Arg Lys Lys Leu Val Leu Glu Asn Leu Glu Asp  
 65 70 75 80

Ser Cys Val Leu Thr Gly Pro Asp Asp Ser Leu Trp Asp Lys His Ala  
 85 90 95

Cys Pro Ala Tyr Val Gly Pro Glu Ile Leu Ser Ser Arg Ala Ser Tyr  
 100 105 110

1100

Ser Gly Lys Ala Ala Asp Val Trp Ser Leu Gly Val Ala Leu Phe Thr  
 115 120 125  
 Met Leu Ala Gly His Tyr Pro Phe Gln Asp Ser Glu Pro Val Leu Leu  
 130 135 140  
 Phe Gly Lys Ile Arg Arg Gly Ala Tyr Ala Leu Pro Ala Gly Leu Ser  
 145 150 155 160  
 Ala Pro Ala Arg Cys Leu Val Arg Cys Leu Leu Arg Arg Glu Pro Ala  
 165 170 175  
 Glu Arg Leu Thr Ala Thr Gly Ile Leu Leu His Pro Trp Leu Arg Gln  
 180 185 190  
 Asp Pro Met Pro Leu Ala Pro Thr Arg Ser His Leu Trp Glu Ala Ala  
 195 200 205  
 Gln Val Val Pro Asp Gly Leu Gly Leu Asp Glu Ala Arg Glu Glu Glu  
 210 215 220  
 Gly Asp Arg Glu Val Val Leu Tyr Gly  
 225 230

<210> 1103  
 <211> 330  
 <212> PRT  
 <213> Homo sapiens

<400> 1103  
 Cys Gln Leu Arg Ser Ala Ala Gly Val Pro Ser Ser Val Ser Val Ser  
 1 5 10 15  
 Pro Arg Asp Pro Ile Ala Met Glu Leu Ser Asp Ala Asn Leu Gln Thr  
 20 25 30  
 Leu Thr Glu Tyr Leu Lys Lys Thr Leu Asp Pro Asp Pro Ala Ile Arg  
 35 40 45  
 Arg Pro Ala Glu Lys Phe Leu Glu Ser Val Glu Gly Asn Gln Asn Tyr  
 50 55 60  
 Pro Leu Leu Leu Leu Thr Leu Leu Glu Lys Ser Gln Asp Asn Val Ile  
 65 70 75 80  
 Lys Val Cys Ala Ser Val Thr Phe Lys Asn Tyr Ile Lys Arg Asn Trp  
 85 90 95  
 Arg Ile Val Glu Asp Glu Pro Asn Lys Ile Cys Glu Ala Asp Arg Val

1101

100	105	110
Ala Ile Lys Ala Asn Ile Val His Leu Met Leu Ser Ser Pro Glu Gln 115 120 125		
Ile Gln Lys Gln Leu Ser Asp Ala Ile Ser Ile Ile Gly Arg Glu Asp 130 135 140		
Phe Pro Gln Lys Trp Pro Asp Leu Leu Thr Glu Met Val Asn Arg Phe 145 150 155 160		
Gln Ser Gly Asp Phe His Val Ile Asn Gly Val Leu Arg Thr Ala His 165 170 175		
Ser Leu Phe Lys Arg Tyr Arg His Glu Phe Lys Ser Asn Glu Leu Trp 180 185 190		
Thr Glu Ile Lys Leu Val Leu Asp Ala Phe Ala Leu Pro Leu Thr Asn 195 200 205		
Leu Phe Lys Ala Thr Ile Glu Leu Cys Ser Thr His Ala Asn Asp Ala 210 215 220		
Ser Ala Leu Arg Ile Leu Phe Ser Ser Leu Ile Leu Ile Ser Lys Leu 225 230 235 240		
Phe Tyr Ser Leu Asn Phe Gln Asp Leu Pro Glu Phe Phe Glu Asp Asn 245 250 255		
Met Glu Thr Trp Met Asn Asn Phe His Thr Leu Leu Thr Leu Asp Asn 260 265 270		
Lys Leu Leu Gln Thr Asp Asp Glu Glu Glu Ala Gly Leu Leu Glu Leu 275 280 285		
Leu Lys Ser Gln Ile Cys Asp Asn Ala Ala Leu Tyr Ala Gln Lys Tyr 290 295 300		
Asp Glu Glu Phe Gln Arg Tyr Leu Pro Arg Phe Val Thr Ala Ile Trp 305 310 315 320		
Glu Phe Thr Ser Tyr Asn Gly Ser Arg Gly 325 330		

&lt;210&gt; 1104

&lt;211&gt; 180

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1102

<220>  
<221> SITE  
<222> (9)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (150)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (167)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (171)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (175)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (177)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (180)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1104  
Gly Thr Ser Pro Gly Arg Gly Gly Xaa Gly Val Gly Leu Arg Gly Leu  
1 5 10 15  
Ser Ser Leu Gln Ala Pro Gln Pro Ser Arg Val Pro Trp Pro Met Ala  
20 25 30  
Ala Tyr Ser Tyr Arg Pro Gly Pro Gly Ala Gly Pro Gly Pro Ala Ala  
35 40 45  
Gly Ala Ala Leu Pro Asp Gln Ser Phe Leu Trp Asn Val Phe Gln Arg  
50 55 60  
Val Asp Lys Asp Arg Ser Gly Val Ile Ser Asp Thr Glu Leu Gln Gln  
65 70 75 80

1103

Ala Leu Ser Asn Gly Thr Trp Thr Pro Phe Asn Pro Val Thr Val Arg  
85 90 95

Ser Ile Ile Ser Met Phe Asp Arg Glu Asn Lys Ala Gly Val Asn Phe  
100 105 110

Ser Glu Phe Thr Gly Val Trp Lys Tyr Ile Thr Asp Trp Gln Asn Val  
115 120 125

Phe Arg Thr Tyr Asp Arg Asp Asn Ser Gly Met Ile Asp Lys Asn Glu  
130 135 140

Leu Lys Gln Ala Leu Xaa Val Ser Ala Thr Gly Ser Leu Thr Ser Ser  
145 150 155 160

Thr Thr Ser Ser Phe Glu Xaa Leu Thr Gly Xaa Gly Arg Gly Xaa Ser  
165 170 175

Xaa Ser Thr Xaa  
180

&lt;210&gt; 1105

&lt;211&gt; 241

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1105

Thr Thr Arg Phe Pro Ser Gly Gln Pro Leu Lys Pro Arg Pro Thr Leu  
1 5 10 15

Thr Ala Ala Gly Pro Arg Pro Gly Leu Leu Cys Phe Thr Ile Tyr Ile  
20 25 30

Met Asn Pro Ser Met Lys Gln Lys Gln Glu Glu Ile Lys Glu Asn Ile  
35 40 45

Lys Asn Ser Ser Val Pro Arg Arg Thr Leu Lys Met Ile Gln Pro Ser  
50 55 60

Ala Ser Gly Ser Leu Val Gly Arg Glu Asn Glu Leu Ser Ala Gly Leu  
65 70 75 80

Ser Lys Arg Lys His Arg Asn Asp His Leu Thr Ser Thr Thr Ser Ser  
85 90 95

Pro Gly Val Ile Val Pro Glu Ser Ser Glu Asn Lys Asn Leu Gly Gly  
100 105 110

Val Thr Gln Glu Ser Phe Asp Leu Met Ile Lys Glu Asn Pro Ser Ser

1104

115	120	125
Gln Tyr Trp Lys Glu Val	Ala Glu Lys Arg Arg	Lys Ala Leu Tyr Glu
130	135	140
Ala Leu Lys Glu Asn Glu	Lys Leu His Lys Glu	Ile Glu Gln Lys Asp
145	150	155
Asn Glu Ile Ala Arg	Leu Lys Lys Glu Asn	Lys Glu Leu Ala Glu Val
165	170	175
Ala Glu His Val Gln Tyr	Met Ala Glu Leu Ile	Glu Arg Leu Asn Gly
180	185	190
Glu Pro Leu Asp Asn Phe	Glu Ser Leu Asp Asn	Gln Glu Phe Asp Ser
195	200	205
Glu Glu Glu Thr Val Glu	Asp Ser Leu Val Glu	Asp Ser Glu Ile Gly
210	215	220
Thr Cys Ala Glu Gly Thr	Val Ser Ser Ser Thr	Asp Ala Lys Pro Cys
225	230	235
Ile		240

&lt;210&gt; 1106

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1106

Phe His Thr Glu Phe Ile	Thr Ile Trp Asp Val	Arg Gln Cys Ser Asn
1	5	10
Lys His Cys Gln His Val	Asn Phe Leu Lys Ser	Val Gly His Ile Ala
20	25	30
Lys Asn Leu Leu Lys His	Asn Cys Ile Phe Cys	Phe Arg Ala Leu Leu
35	40	45
Met Phe Cys Arg Ser Asn	Val Cys Ile Phe Leu	Leu Asn Lys Leu Val
50	55	60
Leu Ile Leu Glu Leu Ser	Asp Asp Phe Val Leu	Glu Arg Thr Thr Gln
65	70	75
Arg Arg Gln Cys Lys	Ser Lys Ser	
85		

1105

&lt;210&gt; 1107

&lt;211&gt; 124

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1107

Leu Val Val Leu Lys Arg Arg Pro Glu Lys Ser Gln Gly His Glu His  
1 5 10 15

Arg Ala Met Pro Phe Leu Asp Ile Gln Lys Arg Phe Gly Leu Asn Ile  
20 25 30

Asp Arg Trp Leu Thr Ile Gln Ser Gly Glu Gln Pro Tyr Lys Met Ala  
35 40 45

Gly Arg Cys His Ala Phe Glu Lys Glu Trp Ile Glu Cys Ala His Gly  
50 55 60

Ile Gly Tyr Thr Arg Ala Glu Lys Glu Cys Lys Ile Glu Tyr Asp Asp  
65 70 75 80

Phe Val Glu Cys Leu Leu Arg Gln Lys Thr Met Arg Arg Ala Gly Thr  
85 90 95

Ile Arg Lys Gln Arg Asp Lys Leu Ile Lys Glu Gly Lys Tyr Thr Pro  
100 105 110

Pro Pro His His Ile Gly Lys Gly Glu Pro Arg Pro  
115 120

&lt;210&gt; 1108

&lt;211&gt; 299

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (32)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (186)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1108



1106

His Leu Leu Cys Cys Arg Ala Gln Arg Arg Pro Gln Thr Pro Pro Ala  
 1 5 10 15  
 Ala Arg Gly Leu Glu Pro Ala Gln Arg Cys Phe Glu Asp Ala Gly Xaa  
 20 25 30  
 Pro Pro Leu Leu Leu Ala Ala Val Leu Leu Gly Leu Val Leu Leu Val  
 35 40 45  
 Val Leu Leu Leu Leu Leu Arg His Trp Gly Trp Gly Leu Cys Leu Ile  
 50 55 60  
 Gly Trp Asn Glu Phe Ile Leu Gln Pro Ile His Asn Leu Leu Met Gly  
 65 70 75 80  
 Asp Thr Lys Glu Gln Arg Ile Leu Asn His Val Leu Gln His Ala Glu  
 85 90 95  
 Pro Gly Asn Ala Gln Ser Val Leu Glu Ala Ile Asp Thr Tyr Cys Glu  
 100 105 110  
 Gln Lys Glu Trp Ala Met Asn Val Gly Asp Lys Lys Gly Lys Ile Val  
 115 120 125  
 Asp Ala Val Ile Gln Glu His Gln Pro Ser Val Leu Leu Glu Leu Gly  
 130 135 140  
 Ala Tyr Cys Gly Tyr Ser Ala Val Arg Met Ala Arg Leu Leu Ser Pro  
 145 150 155 160  
 Gly Ala Arg Leu Ile Thr Ile Glu Ile Asn Pro Asp Cys Ala Ala Ile  
 165 170 175  
 Thr Gln Arg Met Val Asp Phe Ala Gly Xaa Lys Asp Lys Val Thr Leu  
 180 185 190  
 Val Val Gly Ala Ser Gln Asp Ile Ile Pro Gln Leu Lys Lys Lys Tyr  
 195 200 205  
 Asp Val Asp Thr Leu Asp Met Val Phe Leu Asp His Trp Lys Asp Arg  
 210 215 220  
 Tyr Leu Pro Asp Thr Leu Leu Leu Glu Glu Cys Gly Leu Leu Arg Lys  
 225 230 235 240  
 Gly Thr Val Leu Leu Ala Asp Asn Val Ile Cys Pro Gly Ala Pro Asp  
 245 250 255  
 Phe Leu Ala His Val Arg Gly Ser Ser Cys Phe Glu Cys Thr His Tyr  
 260 265 270

1107

Gln Ser Phe Leu Glu Tyr Arg Glu Val Val Asp Gly Leu Glu Lys Ala  
 275 280 285

Ile Tyr Lys Gly Pro Gly Ser Glu Ala Gly Pro  
 290 295

&lt;210&gt; 1109

&lt;211&gt; 300

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1109

Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Arg Leu Arg Asp Leu  
 1 5 10 15

Leu Thr Arg Arg Leu Thr Gly Ser Asn Tyr Pro Gly Leu Ser Ile Ser  
 20 25 30

Leu Arg Leu Thr Gly Ser Ser Ala Gln Glu Xaa Ala Ser Gly Val Ala  
 35 40 45

Leu Gly Glu Ala Pro Asp His Ser Tyr Glu Ser Leu Arg Val Thr Ser  
 50 55 60

Ala Gln Lys His Val Leu His Val Gln Leu Asn Arg Pro Asn Lys Arg  
 65 70 75 80

Asn Ala Met Asn Lys Val Phe Trp Arg Glu Met Val Glu Cys Phe Asn  
 85 90 95

Lys Ile Ser Arg Asp Ala Asp Cys Arg Ala Val Val Ile Ser Gly Ala  
 100 105 110

Gly Lys Met Phe Thr Ala Gly Ile Asp Leu Met Asp Met Ala Ser Asp  
 115 120 125

Ile Leu Gln Pro Lys Gly Asp Asp Val Ala Arg Ile Ser Trp Tyr Leu  
 130 135 140

Arg Asp Ile Ile Thr Arg Tyr Gln Glu Thr Phe Asn Val Ile Glu Arg  
 145 150 155 160

Cys Pro Lys Pro Val Ile Ala Ala Val His Gly Gly Cys Ile Gly Gly  
 165 170 175

1108

Gly Val Asp Leu Val Thr Ala Cys Asp Ile Arg Tyr Cys Ala Gln Asp  
 180 185 190  
 Ala Phe Phe Gln Val Lys Glu Val Asp Val Gly Leu Ala Ala Asp Val  
 195 200 205  
 Gly Thr Leu Gln Arg Leu Pro Lys Val Ile Gly Asn Gln Ser Leu Val  
 210 215 220  
 Asn Glu Leu Ala Phe Thr Ala Arg Lys Met Met Ala Asp Glu Ala Leu  
 225 230 235 240  
 Gly Ser Gly Leu Val Ser Arg Val Phe Pro Asp Lys Glu Val Met Leu  
 245 250 255  
 Asp Ala Ala Leu Ala Leu Ala Ala Glu Ile Ser Ser Lys Ser Pro Val  
 260 265 270  
 Ala Cys Arg Ala Pro Arg Ser Thr Cys Cys Ile Pro Ala Thr Ile Arg  
 275 280 285  
 Trp Pro Arg Ala Ser Thr Thr Trp Arg Pro Gly Thr  
 290 295 300

&lt;210&gt; 1110

&lt;211&gt; 230

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1110

Arg Ser Cys Ala Leu Val Cys Lys His Trp Tyr Arg Cys Leu His Gly  
 1 5 10 15  
 Asp Glu Asn Ser Glu Val Trp Arg Ser Leu Cys Ala Arg Ser Leu Ala  
 20 25 30  
 Glu Glu Ala Leu Arg Thr Asp Ile Leu Cys Asn Leu Pro Ser Tyr Lys  
 35 40 45  
 Ala Lys Ile Arg Ala Phe Gln His Ala Phe Ser Thr Asn Asp Cys Ser  
 50 55 60  
 Arg Asn Val Tyr Ile Lys Lys Asn Gly Phe Thr Leu His Arg Asn Pro  
 65 70 75 80  
 Ile Ala Gln Ser Thr Asp Gly Ala Arg Thr Lys Ile Gly Phe Ser Glu  
 85 90 95

1109

Gly Arg His Ala Trp Glu Val Trp Trp Glu Gly Pro Leu Gly Thr Val  
                   100                  105                  110  
 Ala Val Ile Gly Ile Ala Thr Lys Arg Ala Pro Met Gln Cys Gln Gly  
                   115                  120                  125  
 Tyr Val Ala Leu Leu Gly Ser Asp Asp Gln Ser Trp Gly Trp Asn Leu  
                   130                  135                  140  
 Val Asp Asn Asn Leu Leu His Asn Gly Glu Val Asn Gly Ser Phe Pro  
                   145                  150                  155                  160  
 Gln Cys Asn Asn Ala Pro Lys Tyr Gln Ile Gly Glu Arg Ile Arg Val  
                   165                  170                  175  
 Ile Leu Asp Met Glu Asp Lys Thr Leu Ala Phe Glu Arg Gly Tyr Glu  
                   180                  185                  190  
 Phe Leu Gly Val Ala Phe Arg Gly Leu Pro Lys Val Cys Leu Tyr Pro  
                   195                  200                  205  
 Ala Val Ser Ala Val Tyr Gly Asn Thr Glu Val Thr Leu Val Tyr Leu  
                   210                  215                  220  
 Gly Lys Pro Leu Asp Gly  
                   225                  230

&lt;210&gt; 1111

&lt;211&gt; 59

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1111

Pro Xaa Leu Thr Lys Gly Asn Lys Ser Trp Xaa Ser Thr Ala Val Xaa

1110

1	5	10	15
Thr Ala Leu Glu Leu Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Pro			
20	25	30	
Gln Lys Asn Leu Lys Asn Thr Val Phe Cys Ile Asp Ile Cys Thr Val			
35	40	45	
Cys Val Cys Val Cys Glu Ile Lys Ile Arg Phe			
50	55		

&lt;210&gt; 1112

&lt;211&gt; 425

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (228)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1112

Cys Ile Xaa Gly Phe Tyr Phe Ala Val Leu Ala Pro Gln Glu Leu Leu			
1	5	10	15
Ile Tyr Glu Met Ala Glu Asn Gly Lys Asn Cys Asp Gln Arg Arg Val			
20	25	30	
Ala Met Asn Lys Glu His His Asn Gly Asn Phe Thr Asp Pro Ser Ser			
35	40	45	
Val Asn Glu Lys Lys Arg Arg Glu Arg Glu Glu Arg Gln Asn Ile Val			
50	55	60	
Leu Trp Arg Gln Pro Leu Ile Thr Leu Gln Tyr Phe Ser Leu Glu Ile			
65	70	75	80
Leu Val Ile Leu Lys Glu Trp Xaa Ser Lys Leu Trp His Arg Gln Ser			
85	90	95	

IIII

Ile Val Val Ser Phe Leu Leu Leu Leu Ala Val Leu Ile Ala Thr Tyr			
	100	105	110
Tyr Val Glu Gly Val His Gln Gln Tyr Val Gln Arg Ile Glu Lys Gln			
	115	120	125
Phe Leu Leu Tyr Ala Tyr Trp Ile Gly Leu Gly Ile Leu Ser Ser Val			
	130	135	140
Gly Leu Gly Thr Gly Leu His Thr Phe Leu Leu Tyr Leu Gly Pro His			
	145	150	155
Ile Ala Ser Val Thr Leu Ala Ala Tyr Glu Cys Asn Ser Val Asn Phe			
	165	170	175
Pro Glu Pro Pro Tyr Pro Asp Gln Ile Ile Cys Pro Asp Glu Glu Gly			
	180	185	190
Thr Glu Gly Thr Ile Ser Leu Trp Ser Ile Ile Ser Lys Val Arg Ile			
	195	200	205
Glu Ala Cys Met Trp Gly Ile Gly Thr Ala Ile Gly Glu Leu Pro Pro			
	210	215	220
Tyr Phe Met Xaa Arg Ala Ala Arg Leu Ser Gly Ala Glu Pro Asp Asp			
	225	230	235
Glu Glu Tyr Gln Glu Phe Glu Glu Met Leu Glu His Ala Glu Ser Ala			
	245	250	255
Gln Asp Phe Ala Ser Arg Ala Lys Leu Ala Val Gln Lys Leu Val Gln			
	260	265	270
Lys Val Gly Phe Phe Gly Ile Leu Ala Cys Ala Ser Ile Pro Asn Pro			
	275	280	285
Leu Phe Asp Leu Ala Gly Ile Thr Cys Gly His Phe Leu Val Pro Phe			
	290	295	300
Trp Thr Phe Phe Gly Ala Thr Leu Ile Gly Lys Ala Ile Ile Lys Met			
	305	310	315
His Ile Gln Lys Ile Phe Val Ile Ile Thr Phe Ser Lys His Ile Val			
	325	330	335
Glu Gln Met Val Ala Phe Ile Gly Ala Val Pro Gly Ile Gly Pro Ser			
	340	345	350
Leu Gln Lys Pro Phe Gln Glu Tyr Leu Glu Ala Gln Arg Gln Lys Leu			
	355	360	365

1112

His His Lys Ser Glu Met Gly Thr Pro Gln Gly Glu Asn Trp Leu Ser  
 370 375 380

Trp Met Phe Glu Lys Leu Val Val Val Met Val Cys Tyr Phe Ile Leu  
 385 390 395 400

Ser Ile Ile Asn Ser Met Ala Gln Ser Tyr Ala Lys Arg Ile Gln Gln  
 405 410 415

Arg Leu Asn Ser Glu Glu Lys Thr Lys  
 420 425

<210> 1113

<211> 254

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (1)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1113

Xaa Ile Glu Ile Asn Pro His Val Lys Gly Thr Lys Ala Gly Ala Pro  
 1 5 10 15

Pro Arg Cys Gly Arg Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu  
 20 25 30

Phe Gly Thr Ser Ser Ser Thr Pro Ala Arg Pro Ser Ser His His Ser  
 35 40 45

Ala Cys Phe Leu Gly Pro Glu Ile Met Pro Leu Gly Leu Leu Trp Leu  
 50 55 60

Gly Leu Ala Leu Leu Gly Ala Leu His Ala Gln Ala Gln Asp Ser Thr  
 65 70 75 80

Ser Asp Leu Ile Pro Ala Pro Pro Leu Ser Lys Val Pro Leu Gln Gln  
 85 90 95

Asn Phe Gln Asp Asn Gln Phe Gln Gly Lys Trp Tyr Val Val Gly Leu  
 100 105 110

Ala Gly Asn Ala Ile Leu Arg Glu Asp Lys Asp Pro Gln Lys Met Tyr  
 115 120 125

Ala Thr Ile Tyr Glu Leu Lys Glu Asp Lys Ser Tyr Asn Val Thr Ser

1113

130	135	140
Val Leu Phe Arg Lys Lys Lys Cys Asp Tyr Trp Ile Arg Thr Phe Val		
145	150	155 160
Pro Gly Cys Gln Pro Gly Glu Phe Thr Leu Gly Asn Ile Lys Ser Tyr		
165	170	175
Pro Gly Leu Thr Ser Tyr Leu Val Arg Val Val Ser Thr Asn Tyr Asn		
180	185	190
Gln His Ala Met Val Phe Phe Lys Lys Val Ser Gln Asn Arg Glu Tyr		
195	200	205
Phe Lys Ile Thr Leu Tyr Gly Arg Thr Lys Glu Leu Thr Ser Glu Leu		
210	215	220
Lys Glu Asn Phe Ile Arg Phe Ser Lys Ser Leu Gly Leu Pro Glu Asn		
225	230	235 240
His Ile Val Phe Pro Val Pro Ile Asp Gln Cys Ile Asp Gly		
245	250	

&lt;210&gt; 1114

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1114

Ala Ser Glu Glu Ala Asn Pro Ala Gly Ile Arg Ala Ile Arg Thr Ala		
1	5	10 15
Thr Met Thr Val Gly Lys Ser Ser Lys Met Leu Gln His Ile Asp Tyr		
20	25	30
Arg Met Arg Cys Ile Leu Gln Asp Gly Arg Ile Phe Ile Gly Thr Phe		
35	40	45
Lys Ala Phe Asp Lys His Met Asn Leu Ile Leu Cys Asp Cys Asp Glu		
50	55	60
Phe Arg Lys Ile Lys Pro Lys Asn Ser Lys Gln Ala Glu Arg Glu Glu		
65	70	75 80
Lys Arg Val Leu Gly Leu Val Leu Leu Arg Gly Glu Asn Leu Val Ser		
85	90	95
Met Thr Val Glu Gly Pro Pro Pro Lys Asp Thr Gly Ile Ala Arg Val		
100	105	110



1114

Pro Leu Ala Gly Ala Ala Gly Gly Pro Gly Ile Gly Arg Ala Ala Gly  
 115 120 125  
 Arg Gly Ile Pro Ala Gly Val Pro Met Pro Gln Ala Pro Ala Gly Leu  
 130 135 140  
 Ala Gly Pro Val Arg Gly Val Gly Gly Pro Ser Gln Gln Val Met Thr  
 145 150 155 160  
 Pro Gln Gly Arg Gly Thr Val Ala Ala Ala Ala Ala Ala Thr Ala  
 165 170 175  
 Ser Ile Ala Gly Ala Pro Thr Gln Tyr Pro Pro Gly Arg Gly Gly Pro  
 180 185 190  
 Pro Pro Pro Met Gly Arg Gly Ala Pro Pro Pro Gly Met Met Gly Pro  
 195 200 205  
 Pro Pro Gly Met Arg Pro Pro Met Gly Pro Pro Met Gly Ile Pro Pro  
 210 215 220  
 Gly Arg Gly Thr Pro Met Gly Met Pro Pro Pro Gly Met Arg Pro Pro  
 225 230 235 240  
 Pro Pro Gly Met Arg Gly Leu Leu  
 245

&lt;210&gt; 1115

&lt;211&gt; 777

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1115

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (32)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1115

Leu	Thr	Lys	Gly	Xaa	Lys	Ser	Trp	Xaa	Ser	Thr	Ala	Val	Xaa	Thr	Ala
1				5				10					15		

Leu	Glu	Leu	Val	Xaa	Pro	Pro	Gly	Cys	Arg	Asn	Ser	Ala	Arg	Ala	Xaa
			20					25					30		

Pro	Pro	Leu	Gly	Ser	Ser	Pro	Leu	Gly	Arg	Arg	Phe	Arg	Val	Leu	Ser
		35					40					45			

Ser	Leu	Arg	Arg	Ser	Pro	Met	Phe	Glu	Glu	Lys	Ala	Ser	Ser	Pro	Ser
	50					55					60				

Gly	Lys	Met	Gly	Gly	Glu	Glu	Lys	Pro	Ile	Gly	Ala	Gly	Glu	Glu	Lys
65					70					75					80

Gln	Lys	Glu	Gly	Gly	Lys	Lys	Lys	Asn	Lys	Glu	Gly	Ser	Gly	Asp	Gly
			85						90					95	

Gly	Arg	Ala	Glu	Leu	Asn	Pro	Trp	Pro	Glu	Tyr	Ile	Tyr	Thr	Arg	Leu
		100						105						110	

Glu	Met	Tyr	Asn	Ile	Leu	Lys	Ala	Glu	His	Asp	Ser	Ile	Leu	Ala	Glu
		115					120					125			

Lys	Ala	Glu	Lys	Asp	Ser	Lys	Pro	Ile	Lys	Val	Thr	Leu	Pro	Asp	Gly
	130					135					140				

Lys	Gln	Val	Asp	Ala	Glu	Ser	Trp	Lys	Thr	Thr	Pro	Tyr	Gln	Ile	Ala
145					150					155					160

Cys	Gly	Ile	Ser	Gln	Gly	Leu	Ala	Asp	Asn	Thr	Val	Ile	Ala	Lys	Val
			165						170					175	

Asn	Asn	Val	Val	Trp	Asp	Leu	Asp	Arg	Pro	Leu	Glu	Glu	Asp	Cys	Thr
		180						185					190		

Leu	Glu	Leu	Leu	Lys	Phe	Glu	Asp	Glu	Glu	Ala	Gln	Ala	Val	Tyr	Trp
		195					200					205			

His	Ser	Ser	Ala	His	Ile	Met	Gly	Glu	Ala	Met	Glu	Arg	Val	Tyr	Gly
	210					215					220				

1116

Gly	Cys	Leu	Cys	Tyr	Gly	Pro	Pro	Ile	Glu	Asn	Gly	Phe	Tyr	Tyr	Asp	225	230	235	240
Met	Tyr	Leu	Glu	Glu	Gly	Gly	Val	Ser	Ser	Asn	Asp	Phe	Ser	Ser	Leu	245	250	255	
Glu	Ala	Leu	Cys	Lys	Lys	Ile	Ile	Lys	Glu	Lys	Gln	Ala	Phe	Glu	Arg	260	265	270	
Leu	Glu	Val	Lys	Lys	Glu	Thr	Leu	Leu	Ala	Met	Phe	Lys	Tyr	Asn	Lys	275	280	285	
Phe	Lys	Cys	Arg	Ile	Leu	Asn	Glu	Lys	Val	Asn	Thr	Pro	Thr	Thr	Thr	290	295	300	
Val	Tyr	Arg	Cys	Gly	Pro	Leu	Ile	Asp	Leu	Cys	Arg	Gly	Pro	His	Val	305	310	315	320
Arg	His	Thr	Gly	Lys	Ile	Lys	Ala	Leu	Lys	Ile	His	Lys	Asn	Ser	Ser	325	330	335	
Thr	Tyr	Trp	Glu	Gly	Lys	Ala	Asp	Met	Glu	Thr	Leu	Gln	Arg	Ile	Tyr	340	345	350	
Gly	Ile	Ser	Phe	Pro	Asp	Pro	Lys	Met	Leu	Lys	Glu	Trp	Glu	Lys	Phe	355	360	365	
Gln	Glu	Glu	Ala	Lys	Asn	Arg	Asp	His	Arg	Lys	Ile	Gly	Arg	Asp	Gln	370	375	380	
Glu	Leu	Tyr	Phe	Phe	His	Glu	Leu	Ser	Pro	Gly	Ser	Cys	Phe	Phe	Leu	385	390	395	400
Pro	Lys	Gly	Ala	Tyr	Ile	Tyr	Asn	Ala	Leu	Ile	Glu	Phe	Ile	Arg	Ser	405	410	415	
Glu	Tyr	Arg	Lys	Arg	Gly	Phe	Gln	Glu	Val	Val	Thr	Pro	Asn	Ile	Phe	420	425	430	
Asn	Ser	Arg	Leu	Trp	Met	Thr	Ser	Gly	His	Trp	Gln	His	Tyr	Ser	Glu	435	440	445	
Asn	Met	Phe	Ser	Phe	Glu	Val	Glu	Lys	Glu	Leu	Phe	Ala	Leu	Lys	Pro	450	455	460	
Met	Asn	Cys	Pro	Gly	His	Cys	Leu	Met	Phe	Asp	His	Arg	Pro	Arg	Ser	465	470	475	480
Trp	Arg	Glu	Leu	Pro	Leu	Arg	Leu	Ala	Asp	Phe	Gly	Val	Leu	His	Arg	485	490	495	

1117

Asn	Glu	Leu	Ser	Gly	Ala	Leu	Thr	Gly	Leu	Thr	Arg	Val	Arg	Arg	Phe	500	505	510
Gln	Gln	Asp	Asp	Ala	His	Ile	Phe	Cys	Ala	Met	Glu	Gln	Ile	Glu	Asp	515	520	525
Glu	Ile	Lys	Gly	Cys	Leu	Asp	Phe	Leu	Arg	Thr	Val	Tyr	Ser	Val	Phe	530	535	540
Gly	Phe	Ser	Phe	Lys	Leu	Asn	Leu	Ser	Thr	Arg	Pro	Glu	Lys	Phe	Leu	545	550	555
Gly	Asp	Ile	Glu	Val	Trp	Asp	Gln	Ala	Glu	Lys	Gln	Leu	Glu	Asn	Ser	565	570	575
Leu	Asn	Glu	Phe	Gly	Glu	Lys	Trp	Glu	Leu	Asn	Ser	Gly	Asp	Gly	Ala	580	585	590
Phe	Tyr	Gly	Pro	Lys	Ile	Asp	Ile	Gln	Ile	Lys	Asp	Ala	Ile	Gly	Arg	595	600	605
Tyr	His	Gln	Cys	Ala	Thr	Ile	Gln	Leu	Asp	Phe	Gln	Leu	Pro	Ile	Arg	610	615	620
Phe	Asn	Leu	Thr	Tyr	Val	Ser	His	Asp	Gly	Asp	Asp	Lys	Lys	Arg	Pro	625	630	635
Val	Ile	Val	His	Arg	Ala	Ile	Leu	Gly	Ser	Val	Glu	Arg	Met	Ile	Ala	645	650	655
Ile	Leu	Thr	Glu	Asn	Tyr	Gly	Gly	Lys	Trp	Pro	Phe	Trp	Leu	Ser	Pro	660	665	670
Arg	Gln	Val	Met	Val	Val	Pro	Val	Gly	Pro	Thr	Cys	Asp	Glu	Tyr	Ala	675	680	685
Gln	Lys	Val	Arg	Gln	Gln	Phe	His	Asp	Ala	Lys	Phe	Met	Ala	Asp	Ile	690	695	700
Asp	Leu	Asp	Pro	Gly	Cys	Thr	Leu	Asn	Lys	Lys	Ile	Arg	Asn	Ala	Gln	705	710	715
Leu	Ala	Gln	Tyr	Asn	Phe	Ile	Leu	Val	Val	Gly	Glu	Lys	Glu	Lys	Ile	725	730	735
Ser	Gly	Thr	Val	Asn	Ile	Arg	Thr	Arg	Asp	Asn	Lys	Val	His	Gly	Glu	740	745	750
Arg	Thr	Ile	Ser	Glu	Thr	Ile	Glu	Arg	Leu	Gln	Gln	Leu	Lys	Glu	Phe	755	760	765

1118

Arg Ser Lys Gln Ala Glu Glu Glu Phe  
 770 775

<210> 1116

<211> 360

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (5)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (19)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (29)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (38)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1116

Thr Thr Ser Ala Xaa Arg Trp Asp Gly Thr Arg Gly Arg Thr Arg Gly  
 1 5 10 15

Arg Thr Xaa Gly Phe Gly Asn Leu Ser Ile Thr Gln Xaa Trp Met Met  
 20 25 30

Trp Ala Met Val Ser Xaa Met Glu Ile Asp Gln Pro Ala Gly Thr Gly  
 35 40 45

Thr Leu Ser Arg Thr Asn Pro Pro Thr Gln Lys Pro Pro Ser Pro Pro  
 50 55 60

Met Ser Gly Arg Gly Thr Leu Gly Arg Asn Thr Pro Tyr Lys Thr Leu  
 65 70 75 80

Glu Pro Val Lys Pro Pro Thr Val Pro Asn Asp Tyr Met Thr Ser Pro  
 85 90 95

Ala Arg Leu Gly Ser Gln His Ser Pro Gly Arg Thr Ala Ser Leu Asn

1119

100	105	110
Gln Arg Pro Arg Thr His Ser Gly Ser Ser Gly Gly Ser Gly Ser Arg 115 120 125		
Glu Asn Ser Gly Ser Ser Ser Ile Gly Ile Pro Ile Ala Val Pro Thr 130 135 140		
Pro Ser Pro Pro Thr Ile Gly Pro Ala Ala Pro Gly Ser Ala Pro Gly 145 150 155 160		
Ser Gln Tyr Gly Thr Met Thr Arg Gln Ile Ser Arg His Asn Ser Thr 165 170 175		
Thr Ser Ser Thr Ser Ser Gly Gly Tyr Arg Arg Thr Pro Ser Val Thr 180 185 190		
Ala Gln Phe Ser Ala Gln Pro His Val Asn Gly Gly Pro Leu Tyr Ser 195 200 205		
Gln Asn Ser Ile Ser Ile Ala Pro Pro Pro Pro Pro Met Pro Gln Leu 210 215 220		
Thr Pro Gln Ile Pro Leu Thr Gly Phe Val Ala Arg Val Gln Glu Asn 225 230 235 240		
Ile Ala Asp Ser Pro Thr Pro Pro Pro Pro Pro Pro Pro Asp Asp Ile 245 250 255		
Pro Met Phe Asp Asp Ser Pro Pro Pro Pro Pro Pro Pro Pro Val Asp 260 265 270		
Tyr Glu Asp Glu Glu Ala Ala Val Val Gln Tyr Asn Asp Pro Tyr Ala 275 280 285		
Asp Gly Asp Pro Ala Trp Ala Pro Lys Asn Tyr Ile Glu Lys Val Val 290 295 300		
Ala Ile Tyr Asp Tyr Thr Lys Asp Lys Asp Asp Glu Leu Ser Phe Met 305 310 315 320		
Glu Gly Ala Ile Ile Tyr Val Ile Lys Lys Asn Asp Asp Gly Trp Tyr 325 330 335		
Glu Gly Val Cys Asn Arg Val Thr Gly Leu Phe Pro Gly Asn Tyr Val 340 345 350		
Glu Ser Ile Met His Tyr Thr Asp 355 360		

1120

&lt;210&gt; 1117

&lt;211&gt; 89

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (86)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1117

Pro Ala Arg Leu Gly Ile Thr Cys His Ser Pro Ala Ile Leu Ser Thr  
 1 5 10 15

Ala Leu Trp Gly Gly Ser Ser Pro Ile Pro Asp Ala Pro Thr Thr Gln  
 20 25 30

Trp Lys Val Thr Lys Pro Ala Pro Cys Pro Arg Pro Arg Arg Val Glu  
 35 40 45

Pro Val Cys Ser Gly Leu Gln Ala Gln Ile Leu His Cys Tyr Arg Asp  
 50 55 60

Arg Pro His Glu Val Leu Leu Cys Ser Asp Leu Val Lys Ala Tyr Gln  
 65 70 75 80

Arg Cys Val Ser Ala Xaa His Lys Gly  
 85

&lt;210&gt; 1118

&lt;211&gt; 347

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1118

Arg Gly Val Val Asp Ser Glu Asp Leu Pro Leu Asn Ile Ser Arg Glu  
 1 5 10 15

Met Leu Gln Gln Ser Lys Ile Leu Lys Val Ile Arg Lys Asn Ile Val  
 20 25 30

Lys Lys Cys Leu Glu Leu Phe Ser Glu Leu Ala Glu Asp Lys Glu Asn  
 35 40 45

Tyr Lys Lys Phe Tyr Glu Ala Phe Ser Lys Asn Leu Lys Leu Gly Ile  
 50 55 60

His Glu Asp Ser Thr Asn Arg Arg Arg Leu Ser Glu Leu Leu Arg Tyr

1121

65		70		75		80
His Thr Ser Gln Ser Gly Asp Glu Met Thr Ser Leu Ser Glu Tyr Val						
	85		90		95	
Ser Arg Met Lys Glu Thr Gln Lys Ser Ile Tyr Tyr Ile Thr Gly Glu						
	100		105		110	
Ser Lys Glu Gln Val Ala Asn Ser Ala Phe Val Glu Arg Val Arg Lys						
	115		120		125	
Arg Gly Phe Glu Val Val Tyr Met Thr Glu Pro Ile Asp Glu Tyr Cys						
	130		135		140	
Val Gln Gln Leu Lys Glu Phe Asp Gly Lys Ser Leu Val Ser Val Thr						
	145		150		155	160
Lys Glu Gly Leu Glu Leu Pro Glu Asp Glu Glu Glu Lys Lys Lys Met						
	165		170		175	
Glu Glu Ser Lys Ala Lys Phe Glu Asn Leu Cys Lys Leu Met Lys Glu						
	180		185		190	
Ile Leu Asp Lys Lys Val Glu Lys Val Thr Ile Ser Asn Arg Leu Val						
	195		200		205	
Ser Ser Pro Cys Cys Ile Val Thr Ser Thr Tyr Gly Trp Thr Ala Asn						
	210		215		220	
Met Glu Arg Ile Met Lys Ala Gln Ala Leu Arg Asp Asn Ser Thr Met						
	225		230		235	240
Gly Tyr Met Met Ala Lys Lys His Leu Glu Ile Asn Pro Asp His Pro						
	245		250		255	
Ile Val Glu Thr Leu Arg Gln Lys Ala Glu Ala Asp Lys Asn Asp Lys						
	260		265		270	
Ala Val Lys Asp Leu Val Val Leu Leu Phe Glu Thr Ala Leu Leu Ser						
	275		280		285	
Ser Gly Phe Ser Leu Glu Asp Pro Gln Thr His Ser Asn Arg Ile Tyr						
	290		295		300	
Arg Met Ile Lys Leu Gly Leu Gly Ile Asp Glu Asp Glu Val Ala Ala						
	305		310		315	320
Glu Glu Pro Asn Ala Ala Val Pro Asp Glu Ile Pro Pro Leu Glu Gly						
	325		330		335	
Asp Glu Asp Ala Ser Arg Met Glu Glu Val Asp						



1122

340

345

&lt;210&gt; 1119

&lt;211&gt; 293

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (170)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1119

Pro Gly Ser Pro Asp Val Asn Arg Ala Val Val Arg Pro Pro Pro Pro  
 1 5 10 15

Pro Pro Pro Pro Pro Pro Ala Pro Gln Pro Thr Met Ser Arg Arg Lys  
 20 25 30

Gln Gly Lys Pro Gln His Leu Ser Lys Arg Glu Phe Ser Pro Glu Pro  
 35 40 45

Leu Glu Ala Ile Leu Thr Asp Asp Glu Pro Asp His Gly Pro Leu Gly  
 50 55 60

Ala Pro Glu Gly Asp His Asp Leu Leu Thr Cys Gly Gln Cys Gln Met  
 65 70 75 80

Asn Phe Pro Leu Gly Asp Ile Leu Ile Phe Ile Glu His Lys Arg Lys  
 85 90 95

Gln Cys Asn Gly Ser Leu Cys Leu Glu Lys Ala Val Asp Lys Pro Pro  
 100 105 110

Ser Pro Ser Pro Ile Glu Met Lys Lys Ala Ser Asn Pro Val Glu Val  
 115 120 125

Gly Ile Gln Val Thr Pro Glu Asp Asp Asp Cys Leu Ser Thr Ser Ser  
 130 135 140

Arg Gly Ile Cys Pro Lys Gln Glu His Ile Ala Asp Lys Leu Leu His  
 145 150 155 160

Trp Arg Gly Leu Ser Ser Pro Arg Ser Xaa Thr Trp Ser Ser Asn Pro  
 165 170 175

His Ala Trp Asp Glu Cys Arg Ile Cys Pro Ala Gly Ile Cys Lys Asp  
 180 185 190

1123

Glu Pro Ser Ser Tyr Thr Cys Thr Thr Cys Lys Gln Pro Phe Thr Ser  
 195 200 205  
 Ala Trp Phe Leu Leu Gln His Ala Gln Asn Thr His Gly Leu Arg Ile  
 210 215 220  
 Tyr Leu Glu Ser Glu His Gly Ser Pro Leu Thr Pro Arg Val Gly Ile  
 225 230 235 240  
 Pro Ser Gly Leu Gly Ala Glu Cys Pro Ser Gln Pro Pro Leu His Gly  
 245 250 255  
 Ile His Ile Ala Asp Asn Asn Pro Phe Asn Leu Leu Arg Ile Pro Gly  
 260 265 270  
 Ser Val Ser Arg Glu Ala Ser Gly Leu Gly Arg Arg Ala Leu Ser Thr  
 275 280 285  
 His Ser Pro Pro Val  
 290

&lt;210&gt; 1120

&lt;211&gt; 190

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1120

Ala Ala Ala Ala Ala Gly Asp Pro Gly Ala Met Gly Arg Ala Arg Asp  
 1 5 10 15  
 Ala Ile Leu Asp Ala Leu Glu Asn Leu Thr Ala Glu Glu Leu Lys Lys  
 20 25 30  
 Phe Lys Leu Lys Leu Leu Ser Val Pro Leu Arg Glu Gly Tyr Gly Arg  
 35 40 45  
 Ile Pro Arg Gly Ala Leu Leu Ser Met Asp Ala Leu Asp Leu Thr Asp  
 50 55 60  
 Lys Leu Val Ser Phe Tyr Leu Glu Thr Tyr Gly Ala Glu Leu Thr Ala  
 65 70 75 80  
 Asn Val Leu Arg Asp Met Gly Leu Gln Glu Met Ala Gly Gln Leu Gln  
 85 90 95  
 Ala Ala Thr His Gln Gly Ser Gly Ala Ala Pro Ala Gly Ile Gln Ala  
 100 105 110  
 Pro Pro Gln Ser Ala Ala Lys Pro Gly Leu His Phe Ile Asp Gln His

1124

115	120	125
Arg Ala Ala Leu Ile Ala Arg Val Thr Asn Val Glu Trp Leu Leu Asp		
130	135	140
Ala Leu Tyr Gly Lys Val Leu Thr Asp Glu Gln Tyr Gln Ala Val Arg		
145	150	155
Pro Ser Pro Pro Thr Gln Ala Arg Cys Gly Ser Ser Ser Val Ser His		
165	170	175
Gln Pro Gly Thr Gly Pro Ala Arg Thr Cys Ser Ser Arg Pro		
180	185	190

&lt;210&gt; 1121

&lt;211&gt; 217

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1121

Gly Arg Lys Trp Phe Cys Pro Tyr Lys Thr Trp Arg Lys Ala Phe Leu		
1	5	10
Ser Pro Arg Lys Arg His Val Met Ser Gln Ser Cys Gly Ala Arg Ala		
20	25	30
Glu Val Gln Ala Thr Gly Ser Asp Gly Ala Pro Thr Lys Ala Leu Gly		
35	40	45
Leu Val Arg Val Ala Ala Val Ser Ser Asp Ser Cys Val Val Pro Met		
50	55	60
Val Glu Lys Lys Thr Ser Val Arg Ser Gln Asp Pro Gly Gln Arg Arg		
65	70	75
Val Leu Asp Arg Ala Ala Arg Gln Arg Arg Ile Asn Arg Gln Leu Glu		
85	90	95
Ala Leu Glu Asn Asp Asn Phe Gln Asp Asp Pro His Ala Gly Leu Pro		
100	105	110
Gln Leu Gly Lys Arg Leu Pro Gln Phe Asp Asp Asp Ala Asp Thr Gly		
115	120	125
Lys Lys Lys Lys Lys Thr Arg Gly Asp His Phe Lys Leu Arg Phe Arg		
130	135	140
Lys Asn Phe Gln Ala Leu Leu Glu Glu Gln Asn Leu Ser Val Ala Glu		
145	150	155
		160

1125

Gly Pro Asn Tyr Leu Thr Ala Cys Ala Gly Pro Pro Ser Arg Pro Gln  
                           165                          170                          175

Arg Pro Phe Cys Ala Val Cys Gly Phe Pro Ser Pro Tyr Thr Cys Val  
                           180                          185                          190

Ser Cys Gly Ala Arg Tyr Cys Thr Val Arg Cys Leu Gly Thr His Gln  
                           195                          200                          205

Glu Thr Arg Cys Leu Lys Trp Thr Val  
                           210                          215

&lt;210&gt; 1122

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1122

Gly Asn Cys Gln Lys Cys Ala Phe Gly Tyr Ser Gly Leu Asp Cys Lys  
   1                          5                          10                          15

Asp Lys Phe Gln Leu Ile Leu Thr Ile Val Gly Thr Ile Ala Gly Ile  
                           20                          25                          30

Val Ile Leu Ser Met Ile Ile Ala Leu Ile Val Thr Ala Arg Ser Asn  
                           35                          40                          45

Asn Lys Thr Lys His Ile Glu Glu Asn Leu Ile Asp Glu Asp Phe  
                           50                          55                          60

Gln Asn Leu Lys Leu Arg Ser Thr Gly Phe Thr Asn Leu Gly Ala Glu  
   65                          70                          75                          80

Gly Ser Val Phe Pro Lys Val Arg Ile Thr Ala Ser Arg Asp Ser Gln  
                           85                          90                          95

Met Gln Asn Pro Tyr Ser Ser His Ser Ser Met Pro Arg Pro Asp Tyr  
                           100                          105                          110

&lt;210&gt; 1123

&lt;211&gt; 216

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1126

&lt;400&gt; 1123

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Gly Lys Leu Val Cys Gly Met Val Ser Tyr Leu Asn Asp Leu Pro Ser
 1           5           10           15

Gln Arg Ile Gln Pro Gln Gln Val Ala Val Trp Pro Thr Met Val Asp
      20           25           30

Ile Asn Ser Pro Glu Ser Leu Thr Glu Ala Tyr Lys Leu Arg Ala Ala
      35           40           45

Arg Leu Val Glu Ile Ala Ala Lys Asn Leu Gln Lys Glu Val Ile His
      50           55           60

Arg Lys Ser Lys Glu Val Ala Trp Asn Leu Thr Ser Val Asp Leu Val
      65           70           75           80

Arg Ala Ser Glu Ala His Cys His Tyr Val Val Val Lys Leu Phe Ser
      85           90           95

Glu Lys Leu Leu Lys Ile Gln Asp Lys Ala Ile Gln Ala Val Leu Arg
      100           105           110

Ser Leu Cys Leu Leu Tyr Ser Leu Tyr Gly Ile Ser Gln Asn Ala Gly
      115           120           125

Asp Phe Leu Gln Gly Ser Ile Met Thr Glu Pro Gln Ile Thr Gln Val
      130           135           140

Asn Gln Arg Val Lys Glu Leu Leu Thr Leu Ile Arg Ser Asp Ala Val
      145           150           155           160

Ala Leu Val Asp Ala Phe Asp Phe Gln Asp Val Thr Leu Gly Ser Val
      165           170           175

Leu Gly Arg Tyr Asp Gly Asn Val Tyr Glu Asn Leu Phe Glu Trp Ala
      180           185           190

Lys Asn Ser Pro Leu Asn Lys Ala Glu Val His Glu Ser Tyr Lys His
      195           200           205

Leu Lys Ser Leu Gln Ser Lys Leu
      210           215

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&lt;210&gt; 1124

&lt;211&gt; 218

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1127

&lt;400&gt; 1124

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Pro Ser Pro Arg Pro Pro Asp Pro Glu Ser Ser Gln Leu Arg Pro Gly
 1           5           10           15

Gly Asp Gly Ala Glu Leu Arg Val Leu Val Asp Met Asp Gly Val Leu
          20           25           30

Ala Asp Phe Glu Ala Gly Leu Leu Arg Gly Phe Arg Arg Arg Phe Pro
          35           40           45

Glu Glu Pro His Val Pro Leu Glu Gln Arg Arg Gly Phe Leu Ala Arg
          50           55           60

Glu Gln Tyr Arg Ala Leu Arg Pro Asp Leu Ala Asp Lys Val Ala Ser
          65           70           75           80

Val Tyr Glu Ala Pro Gly Phe Phe Leu Asp Leu Glu Pro Ile Pro Gly
          85           90           95

Ala Leu Asp Ala Val Arg Glu Met Asn Asp Leu Pro Asp Thr Gln Val
          100          105          110

Phe Ile Cys Thr Ser Pro Leu Leu Lys Tyr His His Cys Val Gly Glu
          115          120          125

Lys Tyr Arg Trp Val Glu Gln His Leu Gly Pro Gln Phe Val Glu Arg
          130          135          140

Ile Ile Leu Thr Arg Asp Lys Thr Val Val Leu Gly Asp Leu Leu Ile
          145          150          155          160

Asp Asp Lys Asp Thr Val Arg Gly Gln Glu Glu Thr Pro Ser Trp Glu
          165          170          175

His Ile Leu Phe Thr Cys Cys His Asn Arg His Leu Val Leu Pro Pro
          180          185          190

Thr Arg Arg Arg Leu Leu Ser Trp Ser Asp Asn Trp Arg Glu Ile Leu
          195          200          205

Asp Ser Lys Arg Gly Ala Ala Gln Arg Glu
          210          215

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&lt;210&gt; 1125

&lt;211&gt; 87

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1125

1128

Met Arg Arg Arg Val Phe Phe Leu His Arg Cys Ser Ile Leu Val Phe  
 1 5 10 15  
 Leu Phe Pro Cys Lys Cys Asn Gln Met Pro Phe Tyr Met Trp Thr Tyr  
 20 25 30  
 Leu Tyr Trp Pro Asn Ile Phe Phe Leu Leu Ser Leu Phe Phe Phe Pro  
 35 40 45  
 Phe Phe Leu Leu Pro Leu Phe Leu Tyr Ser Phe Leu Phe Leu Phe Phe  
 50 55 60  
 Phe Phe Phe Ser Phe Phe Phe Gly Ser Cys Cys Tyr Pro Arg His Phe  
 65 70 75 80  
 Thr Ser Pro Ser Leu Lys Gly  
 85

&lt;210&gt; 1126

&lt;211&gt; 174

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (173)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1126

Pro Pro Leu Gly Lys Lys Xaa Glu Leu His Arg Gly Gly Gly Arg Ser  
 1 5 10 15  
 Arg Leu Glu Glu Phe Gln Met Arg Ala Arg Pro Arg Pro Arg Pro Leu  
 20 25 30  
 Trp Ala Thr Val Leu Ala Leu Gly Ala Leu Ala Gly Val Gly Val Gly  
 35 40 45  
 Gly Pro Asn Ile Cys Thr Thr Arg Gly Val Ser Ser Cys Gln Gln Cys  
 50 55 60  
 Leu Ala Val Ser Pro Met Cys Ala Trp Cys Ser Asp Glu Ala Leu Pro  
 65 70 75 80

1129

Leu Gly Ser Pro Arg Cys Asp Leu Lys Glu Asn Leu Leu Lys Asp Asn  
                             85                            90                            95  
 Cys Ala Pro Glu Ser Ile Glu Phe Pro Val Ser Glu Ala Arg Val Leu  
                             100                            105                            110  
 Glu Asp Arg Pro Leu Ser Asp Lys Gly Ser Gly Asp Ser Ser Gln Val  
                             115                            120                            125  
 Thr Gln Val Ser Pro Gln Arg Ile Ala Leu Arg Leu Arg Pro Asp Asp  
                             130                            135                            140  
 Ser Lys Asn Phe Ser Ile Gln Val Arg Gln Val Glu Asp Tyr Pro Val  
 145                            150                            155                            160  
 Asp Ile Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Xaa Gly  
                             165                            170

&lt;210&gt; 1127

&lt;211&gt; 359

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1127

Pro Gln Pro Phe Gln Gly Ser Gly Cys Val Ile Ala Ile Leu Gly Lys  
   1                            5                            10                            15  
 Arg Cys Ser Arg Pro Trp Arg Thr Trp Arg Gly Arg Thr Pro Ser Thr  
                             20                            25                            30  
 Arg His Ile Cys Ser Trp Cys Thr Met Val Ser Gly Thr Ser Ala Ala  
                             35                            40                            45  
 Val Glu Glu Tyr Ser Cys Glu Phe Gly Ser Ala Lys Tyr Tyr Ala Leu  
                             50                            55                            60  
 Cys Gly Phe Gly Gly Val Leu Ser Cys Gly Leu Thr His Thr Ala Val  
   65                            70                            75                            80  
 Val Pro Leu Asp Leu Val Lys Cys Arg Met Gln Val Asp Pro Gln Lys  
                             85                            90                            95  
 Tyr Lys Gly Ile Phe Asn Gly Phe Ser Val Thr Leu Lys Glu Asp Gly  
                             100                            105                            110  
 Val Arg Gly Leu Ala Lys Gly Trp Ala Pro Thr Phe Leu Gly Tyr Ser  
                             115                            120                            125  
 Met Gln Gly Leu Cys Lys Phe Gly Phe Tyr Glu Val Phe Lys Val Leu



1130

130	135	140
Tyr Ser Asn Met Leu Gly Glu Glu Asn Thr Tyr Leu Trp Arg Thr Ser		
145	150	155 160
Leu Tyr Leu Ala Ala Ser Ala Ser Ala Glu Phe Phe Ala Asp Ile Ala		
	165	170 175
Leu Ala Pro Met Glu Ala Ala Lys Val Arg Ile Gln Thr Gln Pro Gly		
	180	185 190
Tyr Ala Asn Thr Leu Arg Asp Ala Ala Pro Lys Met Tyr Lys Glu Glu		
	195	200 205
Gly Leu Lys Ala Phe Tyr Lys Gly Val Ala Pro Leu Trp Met Arg Gln		
	210	215 220
Ile Pro Tyr Thr Met Met Lys Phe Ala Cys Phe Glu Arg Thr Val Glu		
	225	230 235 240
Ala Leu Tyr Lys Phe Val Val Pro Lys Pro Arg Ser Glu Cys Ser Lys		
	245	250 255
Pro Glu Gln Leu Val Val Thr Phe Val Ala Gly Tyr Ile Ala Gly Val		
	260	265 270
Phe Cys Ala Ile Val Ser His Pro Ala Asp Ser Val Val Ser Val Leu		
	275	280 285
Asn Lys Glu Lys Gly Ser Ser Ala Ser Leu Val Leu Lys Arg Leu Gly		
	290	295 300
Phe Lys Gly Val Trp Lys Gly Leu Phe Ala Arg Ile Ile Met Ile Gly		
	305	310 315 320
Thr Leu Thr Ala Leu Gln Trp Phe Ile Tyr Asp Ser Val Lys Val Tyr		
	325	330 335
Phe Arg Leu Pro Arg Pro Pro Pro Pro Glu Met Pro Glu Ser Leu Lys		
	340	345 350
Lys Lys Leu Gly Leu Thr Gln		
	355	

&lt;210&gt; 1128

&lt;211&gt; 399

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1131

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (208)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (349)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1128

Leu Glu Pro Pro Ala Glu Pro Leu Gln Tyr Leu Ala Cys Tyr Arg Phe  
 1 5 10 15

His Cys Ser His Gln Leu Gly Asp Asn Met Trp Phe Leu Thr Thr Leu  
 20 25 30

Leu Leu Trp Val Pro Val Asp Gly Gln Val Asp Thr Thr Lys Ala Val  
 35 40 45

Ile Thr Leu Gln Pro Pro Trp Val Ser Val Phe Gln Glu Glu Thr Val  
 50 55 60

Thr Leu His Cys Glu Val Leu His Leu Pro Gly Ser Ser Ser Thr Gln  
 65 70 75 80

Trp Phe Leu Asn Gly Thr Ala Thr Gln Thr Ser Thr Pro Ser Tyr Arg  
 85 90 95

Ile Thr Ser Ala Ser Val Asn Asp Ser Gly Glu Tyr Arg Cys Gln Arg  
 100 105 110

Gly Leu Ser Gly Arg Ser Asp Pro Ile Gln Leu Glu Ile His Arg Gly  
 115 120 125

Trp Leu Leu Leu Gln Val Ser Ser Arg Val Phe Thr Glu Gly Glu Pro  
 130 135 140

Leu Ala Leu Arg Cys His Ala Trp Lys Asp Lys Leu Val Tyr Asn Val  
 145 150 155 160

Leu Tyr Tyr Arg Asn Gly Lys Ala Phe Lys Phe Phe His Trp Asn Ser  
 165 170 175

Asn Leu Thr Ile Leu Lys Thr Asn Ile Ser His Asn Gly Thr Tyr His  
 180 185 190

Cys Ser Gly Met Gly Lys His Arg Tyr Thr Ser Ala Gly Ile Ser Xaa  
 195 200 205

Thr Val Lys Glu Leu Phe Pro Ala Pro Val Leu Asn Ala Ser Val Thr

1132

210	215	220
Ser Pro Leu Leu Glu Gly Asn Leu Val Thr Leu Ser Cys Glu Thr Lys		
225	230	235 240
Leu Leu Leu Gln Arg Pro Gly Leu Gln Leu Tyr Phe Ser Phe Tyr Met		
	245	250 255
Gly Ser Lys Thr Leu Arg Gly Arg Asn Thr Ser Ser Glu Tyr Gln Ile		
	260	265 270
Leu Thr Ala Arg Arg Glu Asp Ser Gly Leu Tyr Trp Cys Glu Ala Ala		
	275	280 285
Thr Glu Asp Gly Asn Val Leu Lys Arg Ser Pro Glu Leu Glu Leu Gln		
	290	295 300
Val Leu Gly Leu Gln Leu Pro Thr Pro Val Trp Phe His Val Leu Phe		
305	310	315 320
Tyr Leu Ala Val Gly Ile Met Phe Leu Val Asn Thr Val Leu Trp Val		
	325	330 335
Thr Ile Arg Lys Glu Leu Lys Arg Lys Lys Lys Trp Xaa Leu Glu Ile		
	340	345 350
Ser Leu Asp Ser Gly His Glu Lys Lys Val Ile Ser Ser Leu Gln Glu		
	355	360 365
Asp Arg His Leu Glu Glu Glu Leu Lys Cys Gln Glu Gln Lys Glu Glu		
	370	375 380
Gln Leu Gln Glu Gly Val His Arg Lys Glu Pro Gln Gly Ala Thr		
385	390	395

&lt;210&gt; 1129

&lt;211&gt; 147

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1133

&lt;400&gt; 1129

Glu Ile Leu Phe Ile Phe Xaa Xaa Phe Phe Lys Gly Leu Ser Asn Ser  
 1 5 10 15  
 Ala Ala Ala Met Ala Pro Val Lys Lys Leu Val Val Lys Gly Gly Lys  
 20 25 30  
 Lys Lys Lys Gln Val Leu Lys Phe Thr Leu Asp Cys Thr His Pro Val  
 35 40 45  
 Glu Asp Gly Ile Met Asp Ala Ala Asn Phe Glu Gln Phe Leu Gln Glu  
 50 55 60  
 Arg Ile Lys Val Asn Gly Lys Ala Gly Asn Leu Gly Gly Gly Val Val  
 65 70 75 80  
 Thr Ile Glu Arg Ser Lys Ser Lys Ile Thr Val Thr Ser Glu Val Pro  
 85 90 95  
 Phe Ser Lys Arg Tyr Leu Lys Tyr Leu Thr Lys Lys Tyr Leu Lys Lys  
 100 105 110  
 Asn Asn Leu Arg Asp Trp Leu Arg Val Val Ala Asn Ser Lys Glu Ser  
 115 120 125  
 Tyr Glu Leu Arg Tyr Phe Gln Ile Asn Gln Asp Glu Glu Glu Glu Glu  
 130 135 140  
 Asp Glu Asp  
 145

&lt;210&gt; 1130

&lt;211&gt; 91

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1130

Asn Cys Ser Pro Ala Phe Tyr Gly Ser Ser Leu Pro Cys Pro Gln Thr  
 1 5 10 15  
 Gln Gln Lys Arg Arg Gly Arg Ile Arg Gly Leu Ser Arg Pro Ala Pro  
 20 25 30  
 Leu Pro Thr Cys His Thr Arg Cys Glu Phe Glu His Ser Pro Glu Met  
 35 40 45  
 Glu Thr Ser His Pro Gln Leu Asn Asn Gly Pro Phe Met Pro Thr Leu  
 50 55 60

1134

Pro Thr Arg Arg Gly Gln Arg Cys Thr Arg Arg Pro Ser Ser Ser Pro  
 65 70 75 80

Ser Ser Ala Pro Ser His Tyr Ser Trp Phe Tyr  
 85 90

&lt;210&gt; 1131

&lt;211&gt; 510

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (228)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (352)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1131

Thr Ser Glu Glu Ser Arg Pro Arg Leu Ser Gln Leu Ser Val Thr Asp  
 1 5 10 15

Val Thr Thr Ser Ser Leu Arg Leu Asn Trp Glu Ala Pro Pro Gly Ala  
 20 25 30

Phe Asp Ser Phe Leu Leu Arg Phe Gly Val Pro Ser Pro Ser Thr Leu  
 35 40 45

Glu Pro His Pro Arg Pro Leu Leu Gln Arg Glu Leu Met Val Pro Gly  
 50 55 60

Thr Arg His Ser Ala Val Leu Arg Asp Leu Arg Ser Gly Thr Leu Tyr  
 65 70 75 80

Ser Leu Thr Leu Tyr Gly Leu Arg Gly Pro His Lys Ala Asp Ser Ile  
 85 90 95

Gln Gly Thr Ala Arg Thr Leu Ser Pro Val Leu Glu Ser Pro Arg Asp  
 100 105 110

Leu Gln Phe Ser Glu Ile Arg Glu Thr Ser Ala Lys Val Asn Trp Met  
 115 120 125

Pro Pro Pro Ser Arg Ala Asp Ser Phe Lys Val Ser Tyr Gln Leu Ala  
 130 135 140

1135

Asp Gly Gly Glu Pro Gln Ser Val Gln Val Asp Gly Gln Ala Arg Thr			
145	150	155	160
Gln Lys Leu Gln Gly Leu Ile Pro Gly Ala Arg Tyr Glu Val Thr Val			
	165	170	175
Val Ser Val Arg Gly Phe Glu Glu Ser Glu Pro Leu Thr Gly Phe Leu			
	180	185	190
Thr Thr Val Pro Asp Gly Pro Thr Gln Leu Arg Ala Leu Asn Leu Thr			
	195	200	205
Glu Gly Phe Ala Val Leu His Trp Lys Pro Pro Gln Asn Pro Val Asp			
	210	215	220
Thr Tyr Asp Xaa Gln Val Thr Ala Pro Gly Ala Pro Pro Leu Gln Ala			
225	230	235	240
Glu Thr Pro Gly Ser Ala Val Asp Tyr Pro Leu His Asp Leu Val Leu			
	245	250	255
His Thr Asn Tyr Thr Ala Thr Val Arg Gly Leu Arg Gly Pro Asn Leu			
	260	265	270
Thr Ser Pro Ala Ser Ile Thr Phe Thr Thr Gly Leu Glu Ala Pro Arg			
	275	280	285
Asp Leu Glu Ala Lys Glu Val Thr Pro Arg Thr Ala Leu Leu Thr Trp			
	290	295	300
Thr Glu Pro Pro Val Arg Pro Ala Gly Tyr Leu Leu Ser Phe His Thr			
305	310	315	320
Pro Gly Gly Gln Thr Gln Glu Ile Leu Leu Pro Gly Gly Ile Thr Ser			
	325	330	335
His Gln Leu Leu Gly Leu Phe Pro Ser Thr Ser Tyr Asn Ala Arg Xaa			
	340	345	350
Gln Ala Met Trp Gly Gln Ser Leu Leu Pro Pro Val Ser Thr Ser Phe			
	355	360	365
Thr Thr Gly Gly Leu Arg Ile Pro Phe Pro Arg Asp Cys Gly Glu Glu			
	370	375	380
Met Gln Asn Gly Ala Gly Ala Ser Arg Thr Ser Thr Ile Phe Leu Asn			
385	390	395	400
Gly Asn Arg Glu Arg Pro Leu Asn Val Phe Cys Asp Met Glu Thr Asp			
	405	410	415

1136

Gly Gly Gly Trp Leu Val Phe Gln Arg Arg Met Asp Gly Gln Thr Asp  
420 425 430

Phe Trp Arg Asp Trp Glu Asp Tyr Ala His Gly Phe Gly Asn Ile Ser  
435 440 445

Gly Glu Phe Trp Leu Gly Asn Glu Ala Leu His Ser Leu Thr Gln Ala  
450 455 460

Gly Asp Tyr Ser Met Arg Val Asp Leu Arg Ala Gly Asp Glu Ala Val  
465 470 475 480

Phe Ala Gln Tyr Asp Ser Phe His Val Asp Ser Ala Ala Glu Tyr Tyr  
485 490 495

Arg Leu His Leu Glu Gly Tyr His Gly Thr Ala Gly Thr Pro  
500 505 510

<210> 1132

<211> 430

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (182)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (216)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (408)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (410)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (414)

<223> Xaa equals any of the naturally occurring L-amino acids

1137

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (420)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (428)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1132

Arg	Thr	Ala	Asp	Gln	Thr	Val	Thr	Ala	Ala	Leu	Thr	Lys	Arg	Ser	Trp
1				5						10				15	

Asn	Ser	Ser	Ser	Ser	Pro	Gln	Arg	Arg	Thr	Glu	Gln	Thr	Ala	Glu	Thr
			20					25					30		

Met	Glu	Ser	Pro	Ser	Ala	Pro	Pro	His	Arg	Trp	Cys	Ile	Pro	Trp	Gln
		35					40					45			

Arg	Leu	Leu	Leu	Thr	Ala	Ser	Leu	Leu	Thr	Phe	Trp	Asn	Pro	Pro	Thr
	50					55					60				

Thr	Ala	Lys	Leu	Thr	Ile	Glu	Ser	Thr	Pro	Phe	Asn	Val	Ala	Glu	Gly
65					70					75					80

Lys	Glu	Val	Leu	Leu	Leu	Val	His	Asn	Leu	Pro	Gln	His	Leu	Phe	Gly
			85						90					95	

Tyr	Ser	Trp	Tyr	Lys	Gly	Glu	Arg	Val	Asp	Gly	Asn	Arg	Gln	Ile	Ile
		100						105					110		

Gly	Tyr	Val	Ile	Gly	Thr	Gln	Gln	Ala	Thr	Pro	Gly	Pro	Ala	Tyr	Ser
		115					120					125			

Gly	Arg	Glu	Ile	Ile	Tyr	Pro	Asn	Ala	Ser	Leu	Leu	Ile	Gln	Asn	Ile
	130					135					140				

Ile	Gln	Asn	Asp	Thr	Gly	Phe	Tyr	Thr	Leu	His	Val	Ile	Lys	Ser	Asp
145					150					155					160

Leu	Val	Asn	Glu	Glu	Ala	Thr	Gly	Gln	Phe	Arg	Val	Tyr	Pro	Glu	Leu
			165					170						175	

Pro	Lys	Pro	Ser	Ile	Xaa	Ser	Asn	Asn	Ser	Lys	Pro	Val	Glu	Asp	Lys
			180					185					190		

Asp	Ala	Val	Ala	Phe	Thr	Cys	Glu	Pro	Glu	Thr	Gln	Asp	Ala	Thr	Tyr
		195					200					205			

Leu	Trp	Trp	Val	Asn	Asn	Gln	Xaa	Leu	Pro	Val	Ser	Pro	Arg	Leu	Gln
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



1138

210	215	220
Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn		
225	230	235 240
Asp Thr Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg		
	245	250 255
Arg Ser Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro		
	260	265 270
Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn		
	275	280 285
Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe		
	290	295 300
Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn		
	305	310 315 320
Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser		
	325	330 335
Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala		
	340	345 350
Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu		
	355	360 365
Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr		
	370	375 380
Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg		
	385	390 395 400
Leu His Leu Pro Met Thr Thr Xaa Pro Xaa Leu Tyr Ser Xaa Ala Gln		
	405	410 415
Gly Met Met Xaa Asp Pro Met Asn Val Glu Ser Xaa Thr Asn		
	420	425 430

&lt;210&gt; 1133

&lt;211&gt; 737

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

1139

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (7)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (140)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (186)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (194)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (308)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (534)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (535)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1133

Xaa His Ala Ser Ala Ala Xaa Pro Thr Val Thr Ala Ala Leu Thr Arg  
1 5 10 15

Ala Phe Leu Glu Leu Lys Leu Ser Thr Lys Arg Trp Thr Glu Lys Thr  
20 25 30

Ala Glu Thr Met Gly Pro Pro Ser Ala Pro Pro Cys Arg Leu His Val  
35 40 45

Pro Trp Lys Glu Val Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn  
50 55 60

Pro Pro Thr Thr Ala Lys Leu Thr Ile Glu Ser Thr Pro Phe Asn Val

1140

65		70		75		80
Ala Glu Gly Lys Glu Val Leu Leu Leu Ala His Asn Leu Pro Gln Asn						
	85		90		95	
Arg Ile Gly Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Ser						
	100		105		110	
Leu Ile Val Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro						
	115		120		125	
Ala Tyr Ser Gly Arg Glu Thr Ile Tyr Pro Asn Xaa Ser Leu Leu Ile						
	130		135		140	
Gln Asn Val Thr Gln Asn Asp Thr Gly Phe Tyr Thr Leu Gln Val Ile						
	145		150		155	160
Lys Ser Asp Leu Val Asn Glu Glu Ala Thr Gly Gln Phe His Val Tyr						
	165		170		175	
Pro Glu Leu Pro Lys Pro Ser Ile Ser Xaa Asn Asn Ser Asn Pro Val						
	180		185		190	
Glu Xaa Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Val Gln Asn						
	195		200		205	
Thr Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro						
	210		215		220	
Arg Leu Gln Leu Ser Asn Gly Asn Met Thr Leu Thr Leu Leu Ser Val						
	225		230		235	240
Lys Arg Asn Asp Ala Gly Ser Tyr Glu Cys Glu Ile Gln Asn Pro Ala						
	245		250		255	
Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asn Val Leu Tyr Gly Pro						
	260		265		270	
Asp Gly Pro Thr Ile Ser Pro Ser Lys Ala Asn Tyr Arg Pro Gly Glu						
	275		280		285	
Asn Leu Asn Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr						
	290		295		300	
Ser Trp Phe Xaa Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe						
	305		310		315	320
Ile Pro Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala						
	325		330		335	
His Asn Ser Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr						

1141

340	345	350
Val Tyr Ala Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn		
355	360	365
Pro Val Glu Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile		
370	375	380
Gln Asn Thr Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val		
385	390	395
Ser Pro Arg Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu		
405	410	415
Ser Val Thr Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn		
420	425	430
Glu Leu Ser Val Asp His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr		
435	440	445
Gly Pro Asp Asp Pro Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro		
450	455	460
Gly Val Asn Leu Ser Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala		
465	470	475
Gln Tyr Ser Trp Leu Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu		
485	490	495
Leu Phe Ile Ser Asn Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys		
500	505	510
Gln Ala Asn Asn Ser Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr		
515	520	525
Ile Thr Val Ser Ala Xaa Xaa Pro Lys Pro Ser Ile Ser Ser Asn Asn		
530	535	540
Ser Lys Pro Val Glu Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro		
545	550	555
Glu Ala Gln Asn Thr Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu		
565	570	575
Pro Val Ser Pro Arg Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr		
580	585	590
Leu Phe Asn Val Thr Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile		
595	600	605
Gln Asn Ser Val Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val		

1142

610	615	620
Leu Tyr Gly Pro Asp Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr		
625	630	635 640
Leu Ser Gly Ala Asn Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro		
645	650	655
Ser Pro Gln Tyr Ser Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr		
660	665	670
Gln Val Leu Phe Ile Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr		
675	680	685
Ala Cys Phe Val Ser Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val		
690	695	700
Lys Ser Ile Thr Val Ser Ala Ser Gly Thr Ser Pro Gly Leu Ser Ala		
705	710	715 720
Gly Ala Thr Val Gly Ile Met Ile Gly Val Leu Val Gly Val Ala Leu		
725	730	735

Ile

&lt;210&gt; 1134

&lt;211&gt; 71

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1134

Phe Gly Thr Xaa Arg Ser Val Val Leu Leu Leu Val Ala Val Arg Leu
1 5 10 15

His Thr Leu Leu Ser Cys Pro Leu Glu Gln Pro Ala Gly Thr Glu Trp
20 25 30

Ile Leu Glu Glu Gly Val Thr Thr Gly Pro Pro Arg Lys Pro Arg Ala
35 40 45

Asp Ile Tyr Asn Leu Arg Ser Pro Asp Glu Phe Ile Val Gly Gln Asn
50 55 60

1143

Gln Ala Leu Ile Glu Pro Gly  
65 70

&lt;210&gt; 1135

&lt;211&gt; 244

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1135

Gly Leu Arg Arg Leu Asp Ser Ala Ser Gly Thr Val Tyr Thr Ala Met  
1 5 10 15

Asp Val Ala Thr Gly Gln Glu Val Ala Ile Lys Gln Met Asn Leu Gln  
20 25 30

Gln Gln Pro Lys Lys Glu Leu Ile Ile Asn Glu Ile Leu Val Met Arg  
35 40 45

Glu Asn Lys Asn Pro Asn Ile Val Asn Tyr Leu Asp Ser Tyr Leu Val  
50 55 60

Gly Asp Glu Leu Trp Val Val Met Glu Tyr Leu Ala Gly Gly Ser Leu  
65 70 75 80

Thr Asp Val Val Thr Glu Thr Cys Met Asp Glu Gly Gln Ile Ala Ala  
85 90 95

Val Cys Arg Glu Xaa Leu Gln Ala Leu Glu Phe Leu His Ser Asn Gln  
100 105 110

Ile Thr Pro Glu Gln Ser Lys Arg Ser Thr Met Val Gly Thr Pro Tyr  
115 120 125

Trp Met Ala Pro Glu Val Val Thr Arg Lys Ala Tyr Gly Pro Lys Val  
130 135 140

Asp Ile Trp Ser Leu Gly Ile Met Ala Ile Glu Met Ile Glu Gly Glu  
145 150 155 160

Pro Pro Tyr Leu Asn Glu Asn Pro Leu Arg Ala Leu Tyr Leu Ile Ala  
165 170 175

Thr Asn Gly Thr Pro Glu Leu Gln Asn Pro Glu Lys Leu Ser Ala Ile  
180 185 190

1144

Phe Arg Asp Phe Leu Asn Arg Cys Leu Glu Met Asp Val Glu Lys Arg  
 195 200 205

Gly Ser Ala Lys Glu Leu Leu Gln His Gln Phe Leu Lys Ile Ala Lys  
 210 215 220

Pro Leu Ser Ser Leu Thr Pro Leu Ile Ala Ala Ala Lys Glu Ala Thr  
 225 230 235 240

Lys Asn Asn His

<210> 1136

<211> 166

<212> PRT

<213> Homo sapiens

<400> 1136

Arg Ala Glu Phe Gly Thr Ser Pro Arg Ala Arg Arg His Glu Cys Cys  
 1 5 10 15

Arg Phe Leu Asp Asp Asn Gln Ile Ile Thr Ser Ser Gly Asp Thr Thr  
 20 25 30

Cys Ala Leu Trp Asp Ile Glu Thr Gly Gln Gln Thr Val Gly Phe Ala  
 35 40 45

Gly His Ser Gly Asp Val Met Ser Leu Ser Leu Ala Pro Asp Gly Arg  
 50 55 60

Thr Phe Val Ser Gly Ala Cys Asp Ala Ser Ile Lys Leu Trp Asp Val  
 65 70 75 80

Arg Asp Ser Met Cys Arg Gln Thr Phe Ile Gly His Glu Ser Asp Ile  
 85 90 95

Asn Ala Val Ala Phe Phe Pro Asn Gly Tyr Ala Phe Thr Thr Gly Ser  
 100 105 110

Asp Asp Ala Thr Cys Arg Leu Phe Asp Leu Arg Ala Asp Gln Glu Leu  
 115 120 125

Leu Met Tyr Ser His Asp Asn Ile Ile Cys Gly Ile Thr Ser Val Ala  
 130 135 140

Phe Ser Arg Ser Asp Gly Cys Cys Ser Leu Ala Thr Thr Thr Ser Thr  
 145 150 155 160

1145

Ala Thr Ser Gly Met Pro  
165

&lt;210&gt; 1137

&lt;211&gt; 79

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1137

Thr Asn Asn Lys Ser Leu Val Gln Leu Lys His Ile Ser Asn Asp Phe  
1 5 10 15

Ser Lys Phe Lys Val Asp His Asp Arg Ile Ile Lys Asp Arg Lys Asp  
20 25 30

Leu Ser Asn Leu Val Met Thr Ile Ile Ser Ile Phe Ala Glu Leu Lys  
35 40 45

Ile Phe Asn Phe Ile Asn Met Leu Leu Gln Leu Pro Asp Leu Lys Lys  
50 55 60

Lys Ser Phe Pro His Ser Gln Leu Lys Val Arg Thr Leu His Phe  
65 70 75

&lt;210&gt; 1138

&lt;211&gt; 397

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1138

Pro Thr Arg Pro Ser Ser Val Ser Arg Arg Asp Lys Ser Lys Gln Val  
1 5 10 15

Trp Glu Ala Val Leu Leu Pro Leu Ser Leu Leu Ser Met Met Asp Leu  
20 25 30

Arg Asn Thr Pro Ala Lys Ser Leu Asp Lys Phe Ile Glu Asp Tyr Leu  
35 40 45

Leu Pro Asp Thr Cys Phe Arg Met Gln Ile Asn His Ala Ile Asp Ile  
50 55 60

Ile Cys Gly Phe Leu Lys Glu Arg Cys Phe Arg Gly Ser Ser Tyr Pro  
65 70 75 80

Val Cys Val Ser Lys Val Val Lys Gly Gly Ser Ser Gly Lys Gly Thr  
85 90 95



1146

Thr Leu Arg Gly Arg Ser Asp Ala Asp Leu Val Val Phe Leu Ser Pro  
 100 105 110

Leu Thr Thr Phe Gln Asp Gln Leu Asn Arg Arg Gly Glu Phe Ile Gln  
 115 120 125

Glu Ile Arg Arg Gln Leu Glu Ala Cys Gln Arg Glu Arg Ala Phe Ser  
 130 135 140

Val Lys Phe Glu Val Gln Ala Pro Arg Trp Gly Asn Pro Arg Ala Leu  
 145 150 155 160

Ser Phe Val Leu Ser Ser Leu Gln Leu Gly Glu Gly Val Glu Phe Asp  
 165 170 175

Val Leu Pro Ala Phe Asp Ala Leu Asp Phe Ala Arg Thr Gly Gln Leu  
 180 185 190

Thr Gly Gly Tyr Lys Pro Asn Pro Gln Ile Tyr Val Lys Leu Ile Glu  
 195 200 205

Glu Cys Thr Asp Leu Gln Lys Glu Gly Glu Phe Ser Thr Cys Phe Thr  
 210 215 220

Glu Leu Gln Arg Asp Phe Leu Lys Gln Arg Pro Thr Lys Leu Lys Ser  
 225 230 235 240

Leu Ile Arg Leu Val Lys His Trp Tyr Gln Asn Cys Lys Lys Lys Leu  
 245 250 255

Gly Lys Leu Pro Pro Gln Tyr Ala Leu Glu Leu Leu Thr Val Tyr Ala  
 260 265 270

Trp Glu Arg Gly Ser Met Lys Thr His Phe Asn Thr Ala Gln Gly Phe  
 275 280 285

Arg Thr Val Leu Glu Leu Val Ile Asn Tyr Gln Gln Leu Cys Ile Tyr  
 290 295 300

Trp Thr Lys Tyr Tyr Asp Phe Lys Asn Pro Ile Ile Glu Lys Tyr Leu  
 305 310 315 320

Arg Arg Gln Leu Thr Lys Pro Arg Pro Val Ile Leu Asp Pro Ala Asp  
 325 330 335

Pro Thr Gly Asn Leu Gly Gly Gly Asp Pro Lys Gly Trp Arg Gln Leu  
 340 345 350

Ala Gln Glu Ala Glu Ala Trp Leu Asn Tyr Pro Cys Phe Lys Asn Trp  
 355 360 365

1147

Asp Gly Ser Pro Val Ser Ser Trp Ile Leu Leu Val Arg Pro Pro Ala  
 370 375 380

Ser Ser Leu Pro Phe Ile Pro Ala Pro Leu His Glu Ala  
 385 390 395

<210> 1139

<211> 180

<212> PRT

<213> Homo sapiens

<400> 1139

Phe Leu Leu Ser Asn Ala Arg Trp Ser Asn Arg Pro Asp Thr Ala Thr  
 1 5 10 15

Ala Leu Ala Gly Gly Ala Val Met Pro Glu Leu Ile Leu Ser Pro Ala  
 20 25 30

Thr Ala Pro His Pro Leu Lys Met Phe Ala Cys Ser Lys Phe Val Ser  
 35 40 45

Thr Pro Ser Leu Val Lys Ser Thr Ser Gln Leu Leu Ser Arg Pro Leu  
 50 55 60

Ser Ala Val Val Leu Lys Arg Pro Glu Ile Leu Thr Asp Glu Ser Leu  
 65 70 75 80

Ser Ser Leu Ala Val Ser Cys Pro Leu Thr Ser Leu Val Ser Ser Arg  
 85 90 95

Ser Phe Gln Thr Ser Ala Ile Ser Arg Asp Ile Asp Thr Ala Ala Lys  
 100 105 110

Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala Gly Ser Gly Ala  
 115 120 125

Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn  
 130 135 140

Pro Ser Leu Lys Gln Gln Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala  
 145 150 155 160

Leu Ser Glu Ala Met Gly Leu Phe Cys Leu Met Val Ala Phe Leu Ile  
 165 170 175

Leu Phe Ala Met  
 180

1148

&lt;210&gt; 1140

&lt;211&gt; 484

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1140

Trp	Leu	Leu	Arg	Ser	Pro	Gly	Lys	Leu	Thr	Ala	Arg	Glu	Arg	Ile	Ser
1				5					10					15	

Leu	Leu	Leu	Asp	Pro	Gly	Ser	Phe	Xaa	Glu	Ser	Asp	Met	Phe	Val	Glu
			20					25						30	

His	Arg	Cys	Ala	Asp	Phe	Gly	Met	Ala	Ala	Asp	Lys	Asn	Lys	Phe	Pro
		35					40					45			

Gly	Asp	Ser	Val	Val	Thr	Gly	Arg	Gly	Arg	Ile	Asn	Gly	Arg	Leu	Val
	50					55					60				

Tyr	Val	Phe	Ser	Gln	Asp	Phe	Thr	Val	Phe	Gly	Gly	Ser	Leu	Ser	Gly
65					70					75					80

Ala	His	Ala	Gln	Lys	Ile	Cys	Lys	Ile	Met	Asp	Gln	Ala	Ile	Thr	Val
				85					90					95	

Gly	Ala	Pro	Val	Ile	Gly	Leu	Asn	Asp	Ser	Gly	Gly	Ala	Arg	Ile	Gln
		100						105					110		

Glu	Gly	Val	Glu	Ser	Leu	Ala	Gly	Tyr	Ala	Asp	Ile	Phe	Leu	Arg	Asn
		115					120					125			

Val	Thr	Ala	Ser	Gly	Val	Ile	Pro	Gln	Ile	Ser	Leu	Ile	Met	Gly	Pro
	130					135					140				

Cys	Ala	Gly	Gly	Ala	Val	Tyr	Ser	Pro	Ala	Leu	Thr	Asp	Phe	Thr	Phe
145					150					155					160

Met	Val	Lys	Asp	Thr	Ser	Tyr	Leu	Phe	Ile	Thr	Gly	Pro	Asp	Val	Val
			165						170					175	

Lys	Ser	Val	Thr	Asn	Glu	Asp	Val	Thr	Gln	Glu	Glu	Leu	Gly	Gly	Ala
			180					185					190		

Lys	Thr	His	Thr	Thr	Met	Ser	Gly	Val	Ala	His	Arg	Ala	Phe	Glu	Asn
		195					200					205			

1149

Asp Val Asp Ala Leu Cys Asn Leu Arg Asp Phe Phe Asn Tyr Leu Pro  
 210 215 220

Leu Ser Ser Gln Asp Pro Ala Pro Val Arg Glu Cys His Asp Pro Ser  
 225 230 235 240

Asp Arg Leu Val Pro Glu Leu Asp Thr Ile Val Pro Leu Glu Ser Thr  
 245 250 255

Lys Ala Tyr Asn Met Val Asp Ile Ile His Ser Val Val Asp Glu Arg  
 260 265 270

Glu Phe Phe Glu Ile Met Pro Asn Tyr Ala Lys Asn Ile Ile Val Gly  
 275 280 285

Phe Ala Arg Met Asn Gly Arg Thr Val Gly Ile Val Gly Asn Gln Pro  
 290 295 300

Lys Val Ala Ser Gly Cys Leu Asp Ile Asn Ser Ser Val Lys Gly Ala  
 305 310 315 320

Arg Phe Val Arg Phe Cys Asp Ala Phe Asn Ile Pro Leu Ile Thr Phe  
 325 330 335

Val Asp Val Pro Gly Phe Leu Pro Gly Thr Ala Gln Glu Tyr Gly Gly  
 340 345 350

Ile Ile Arg His Gly Ala Lys Leu Leu Tyr Ala Phe Ala Glu Ala Thr  
 355 360 365

Val Pro Lys Val Thr Val Ile Thr Arg Lys Ala Tyr Gly Gly Ala Tyr  
 370 375 380

Asp Val Met Ser Ser Lys His Leu Cys Gly Asp Thr Asn Tyr Ala Trp  
 385 390 395 400

Pro Thr Ala Glu Ile Ala Val Met Gly Ala Lys Gly Ala Val Glu Ile  
 405 410 415

Ile Phe Lys Gly His Glu Asn Val Glu Ala Ala Gln Ala Glu Tyr Ile  
 420 425 430

Glu Lys Phe Ala Asn Pro Phe Pro Ala Ala Val Arg Gly Phe Val Asp  
 435 440 445

Asp Ile Ile Gln Pro Ser Ser Thr Arg Ala Arg Ile Cys Cys Asp Leu  
 450 455 460

Asp Val Leu Ala Ser Lys Lys Val Gln Arg Pro Trp Arg Lys His Ala  
 465 470 475 480

1150

Asn Ile Pro Leu

&lt;210&gt; 1141

&lt;211&gt; 59

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (54)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1141

Leu	Xaa	Glu	Leu	Glu	Arg	Tyr	Val	Thr	Ser	Cys	Leu	Arg	Lys	Lys	Arg
1				5					10					15	

Lys	Pro	Gln	Ala	Glu	Lys	Val	Asp	Val	Ile	Ala	Gly	Ser	Ser	Lys	Met
		20					25						30		

Lys	Gly	Phe	Ser	Ser	Ser	Glu	Ser	Glu	Ser	Ser	Ser	Glu	Ser	Ser	Ser
		35				40						45			

Ser	Asp	Ser	Glu	Xaa	Xaa	Glu	Thr	Gly	Pro	Ala
	50					55				

&lt;210&gt; 1142

&lt;211&gt; 199

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1142

Ser	Gly	Tyr	Lys	Thr	Ile	Ser	Ala	Met	Gln	Thr	Ile	Lys	Cys	Val	Val
1				5					10				15		

Val Gly Asp Gly Ala Val Gly Lys Thr Cys Leu Leu Ile Ser Tyr Thr

1151

20 25 30  
 Thr Asn Lys Phe Pro Ser Glu Tyr Val Pro Thr Val Phe Asp Asn Tyr  
 35 40 45  
 Ala Val Thr Val Met Ile Gly Gly Glu Pro Tyr Thr Leu Gly Leu Phe  
 50 55 60  
 Asp Thr Ala Gly Gln Glu Asp Tyr Asp Arg Leu Arg Pro Leu Ser Tyr  
 65 70 75 80  
 Pro Gln Thr Asp Val Phe Leu Val Cys Phe Ser Val Val Ser Pro Ser  
 85 90 95  
 Ser Phe Glu Asn Val Lys Glu Lys Trp Val Pro Glu Ile Thr His His  
 100 105 110  
 Cys Pro Lys Thr Pro Phe Leu Leu Val Gly Thr Gln Ile Asp Leu Arg  
 115 120 125  
 Asp Asp Pro Ser Thr Ile Glu Lys Leu Ala Lys Asn Lys Gln Lys Pro  
 130 135 140  
 Ile Thr Pro Glu Thr Ala Glu Lys Leu Ala Arg Asp Leu Lys Ala Val  
 145 150 155 160  
 Lys Tyr Val Glu Cys Ser Ala Leu Thr Gln Lys Gly Leu Lys Asn Val  
 165 170 175  
 Phe Asp Glu Ala Ile Leu Ala Ala Leu Glu Pro Pro Glu Pro Lys Lys  
 180 185 190  
 Ser Arg Arg Cys Val Leu Leu  
 195

&lt;210&gt; 1143

&lt;211&gt; 171

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1143

Gly Asp Leu Asp Cys Pro Asp Trp Val Leu Ala Glu Ile Ser Thr Leu  
 1 5 10 15  
 Ala Lys Met Tyr Glu Lys Ile Leu Lys Leu Thr Ala Asp Ala Lys Phe  
 20 25 30  
 Glu Ser Gly Asp Val Lys Ala Thr Val Ala Val Leu Ser Phe Ile Leu  
 35 40 45

Ser	Ser	Ala	Ala	Lys	His	Ser	Val	Asp	Gly	Glu	Ser	Leu	Ser	Ser	Glu
50						55					60				
Leu	Gln	Gln	Leu	Gly	Leu	Pro	Lys	Glu	His	Ala	Ala	Ser	Leu	Cys	Arg
65					70					75					80
Cys	Tyr	Glu	Glu	Lys	Gln	Ser	Pro	Leu	Gln	Lys	His	Leu	Arg	Val	Cys
				85					90					95	
Ser	Leu	Arg	Met	Asn	Arg	Leu	Ala	Gly	Val	Gly	Trp	Arg	Val	Asp	Tyr
			100					105					110		
Thr	Leu	Ser	Ser	Ser	Leu	Leu	Gln	Ser	Val	Glu	Glu	Pro	Met	Val	His
		115					120					125			
Leu	Arg	Leu	Glu	Val	Ala	Ala	Ala	Pro	Gly	Thr	Pro	Ala	Gln	Pro	Val
	130					135					140				
Ala	Met	Ser	Leu	Ser	Ala	Asp	Lys	Phe	Gln	Val	Leu	Leu	Ala	Glu	Leu
145					150					155					160
Lys	Gln	Ala	Gln	Thr	Leu	Met	Ser	Ser	Leu	Gly					
				165					170						

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<210> 1144
<211> 151
<212> PRT
<213> Homo sapiens
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<220>
<221> SITE
<222> (22)
<223> Xaa equals any of the naturally occurring L-amino acids
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<220>
<221> SITE
<222> (38)
<223> Xaa equals any of the naturally occurring L-amino acids
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<220>  
<221> SITE  
<222> (40)  
<223> Xaa equals any of the naturally occurring L-amino acids
```

<400> 1144  
Gln Trp Arg Gln Gly Val Gln Gly Arg Ser Ala Ser Gly Thr Ser Thr  
1 5 10 15

1153

Cys Arg Val Ala Arg Xaa Gly Gln Asp Trp Pro Ala Ala Ser Pro Gly  
                   20                  25                  30  
 Val Asn Leu Arg Asn Xaa Phe Xaa Pro Pro Leu Leu Leu Ala Pro Val  
                   35                  40                  45  
 Pro Thr Pro Val Ala Pro Ser Leu Gly Ser Pro Leu Leu Leu Ser His  
                   50                  55                  60  
 Pro Glu Arg Gln Ser Gly Pro Val Thr Gly Gly Ala Gly Glu Gly His  
                   65                  70                  75                  80  
 Arg Cys Ala Ser Pro Gln Thr Val Cys Gln Val Ser Glu Leu Val Thr  
                   85                  90                  95  
 Arg Pro Ala Ala Gln Pro Ser Ala Ala Ala Gln Pro Ala Ala Pro Ala  
                   100                  105                  110  
 Gly Gly Arg Thr Pro Gly Arg Ala Gly Pro His Leu Pro Ile Tyr Lys  
                   115                  120                  125  
 Ile Gly Gln Gly Asn Met Lys Ala Asp Leu Gln Ala Ala Ala Thr Ala  
                   130                  135                  140  
 Lys Pro Gly Lys Ser Gln Gln  
                   145                  150

&lt;210&gt; 1145

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1145

Ala Asp Ile Ala Gly Val Leu Ala Ile Arg Pro Asp Glu Leu Arg Phe  
                   1                  5                  10                  15  
 Arg Tyr Ser Met Val Ala Tyr Trp Arg Gln Ala Gly Leu Ser Tyr Ile  
                   20                  25                  30  
 Arg Tyr Ser Gln Ile Cys Ala Lys Ala Val Arg Asp Ala Leu Lys Thr  
                   35                  40                  45  
 Glu Phe Lys Ala Asn Ala Glu Lys Thr Ser Gly Ser Asn Val Lys Ile  
                   50                  55                  60  
 Val Lys Val Lys Lys Glu  
                   65                  70



1154

&lt;210&gt; 1146

&lt;211&gt; 166

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1146

Leu	His	Ala	Asn	Gln	Val	Ile	His	Arg	Asp	Ile	Lys	Ser	Asp	Asn	Val
1				5					10					15	

Leu	Leu	Gly	Met	Glu	Gly	Ser	Val	Lys	Leu	Thr	Asp	Phe	Gly	Phe	Cys
		20						25					30		

Ala	Gln	Ile	Thr	Pro	Glu	Gln	Ser	Lys	Arg	Ser	Thr	Met	Val	Gly	Thr
		35					40					45			

Pro	Tyr	Trp	Met	Ala	Pro	Glu	Xaa	Val	Thr	Arg	Lys	Ala	Tyr	Gly	Pro
	50						55				60				

Lys	Val	Asp	Ile	Trp	Ser	Leu	Gly	Ile	Met	Ala	Ile	Glu	Met	Val	Glu
65					70					75					80

Gly	Glu	Pro	Pro	Tyr	Leu	Asn	Glu	Asn	Pro	Leu	Arg	Ala	Leu	Tyr	Leu
				85					90					95	

Ile	Ala	Thr	Asn	Gly	Thr	Pro	Glu	Leu	Gln	Asn	Pro	Glu	Lys	Leu	Ser
			100					105					110		

Pro	Ile	Phe	Arg	Asp	Phe	Leu	Asn	Arg	Cys	Leu	Glu	Met	Asp	Val	Glu
		115					120					125			

Lys	Arg	Gly	Ser	Ala	Lys	Glu	Leu	Leu	Gln	His	Pro	Phe	Leu	Lys	Leu
	130					135					140				

Ala	Lys	Pro	Leu	Ser	Ser	Leu	Thr	Pro	Leu	Ile	Met	Ala	Ala	Lys	Glu
145					150					155					160

Ala	Met	Lys	Ser	Asn	Arg
				165	

&lt;210&gt; 1147

&lt;211&gt; 420

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1155

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (203)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1147

Cys Pro Pro Phe Ser Val Arg Val Pro Pro Trp Ala Gly Leu Ala Leu

1 5 10 15

Leu Pro Ser Pro Ser Leu Met Ala Leu Leu Arg Arg Pro Thr Val Ser

20 25 30

Ser Asp Leu Glu Asn Ile Asp Thr Gly Val Asn Ser Lys Val Lys Ser

35 40 45

His Val Thr Ile Arg Arg Thr Val Leu Glu Glu Ile Gly Asn Arg Val

50 55 60

Thr Thr Arg Ala Ala Gln Val Ala Lys Lys Ala Gln Asn Thr Lys Val

65 70 75 80

Pro Val Gln Pro Thr Lys Thr Thr Asn Val Asn Lys Gln Leu Lys Pro

85 90 95

Thr Ala Ser Val Lys Pro Val Gln Met Glu Lys Leu Ala Pro Lys Gly

100 105 110

Pro Ser Pro Thr Pro Glu Asp Val Ser Met Lys Glu Glu Asn Leu Cys

115 120 125

Gln Ala Phe Ser Asp Ala Leu Leu Cys Lys Ile Glu Asp Ile Asp Asn

130 135 140

Glu Asp Trp Glu Asn Pro Gln Leu Cys Ser Asp Tyr Val Lys Asp Ile

145 150 155 160

Tyr Gln Tyr Leu Arg Gln Leu Glu Val Leu Gln Ser Ile Asn Pro His

165 170 175

Phe Leu Asp Gly Arg Asp Ile Asn Gly Arg Met Arg Ala Ile Leu Val

180 185 190

Asp Trp Leu Val Gln Val His Ser Lys Phe Xaa Leu Leu Gln Glu Thr

195 200 205

Leu Tyr Met Cys Val Gly Ile Met Asp Arg Phe Leu Gln Val Gln Pro

210 215 220

Val Ser Arg Lys Lys Leu Gln Leu Val Gly Ile Thr Ala Leu Leu Leu

225 230 235 240

1156

Ala	Ser	Lys	Tyr	Glu	Glu	Met	Phe	Ser	Pro	Asn	Ile	Glu	Asp	Phe	Val
				245						250		255			
Tyr	Ile	Thr	Asp	Asn	Ala	Tyr	Thr	Ser	Ser	Gln	Ile	Arg	Glu	Met	Glu
				260						265		270			
Thr	Leu	Ile	Leu	Lys	Glu	Leu	Lys	Phe	Glu	Leu	Gly	Arg	Pro	Leu	Pro
				275						280		285			
Leu	His	Phe	Leu	Arg	Arg	Ala	Ser	Lys	Ala	Gly	Glu	Val	Asp	Val	Glu
				290						295		300			
Gln	His	Thr	Leu	Ala	Lys	Tyr	Leu	Met	Glu	Leu	Thr	Leu	Ile	Asp	Tyr
305				310				315				320			
Asp	Met	Val	His	Tyr	His	Pro	Ser	Lys	Val	Ala	Ala	Ala	Ala	Ser	Cys
				325						330		335			
Leu	Ser	Gln	Lys	Val	Leu	Gly	Gln	Gly	Lys	Trp	Asn	Leu	Lys	Gln	Gln
				340						345		350			
Tyr	Tyr	Thr	Gly	Tyr	Thr	Glu	Asn	Glu	Val	Leu	Glu	Val	Met	Gln	His
				355						360		365			
Met	Ala	Lys	Asn	Val	Val	Lys	Val	Asn	Glu	Asn	Leu	Thr	Lys	Phe	Ile
				370						375		380			
Ala	Ile	Lys	Asn	Lys	Tyr	Ala	Ser	Ser	Lys	Leu	Leu	Lys	Ile	Ser	Met
385				390				395				400			
Ile	Pro	Gln	Leu	Asn	Ser	Lys	Ala	Val	Lys	Asp	Leu	Ala	Ser	Pro	Leu
				405						410		415			
Ile	Gly	Arg	Ser												
420															

<210> 1148

<211> 249

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (244)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1148

Gln Ser Asn Ala Val Trp Leu Leu Gly His Leu His Leu Ser Thr Leu

1157

1	5	10	15
Ser Ser Ser Gln Ser Arg Ala Ser Val Pro Thr Asp Tyr Ser Tyr Leu	20	25	30
Pro Glu Ser Ser Phe Ile Gly Ala Ala Ile Gly Phe Phe Ile Thr Gly	35	40	45
Gly Lys Lys Gly Pro Glu Ser Val Pro Pro Ser Leu Leu Lys Val Val	50	55	60
Met Lys Pro Ile Ala Thr Val Gly Glu Ser Tyr Gln Tyr Pro Pro Val	65	70	75
Asn Trp Ala Ala Leu Leu Ser Pro Leu Met Arg Leu Asn Phe Gly Glu	85	90	95
Glu Ile Gln Gln Leu Cys Leu Glu Ile Met Val Thr Gln Ala Gln Ser	100	105	110
Ser Gln Asn Ala Ala Ala Leu Leu Gly Leu Trp Val Thr Pro Pro Leu	115	120	125
Ile His Ser Leu Ser Leu Asn Thr Lys Arg Tyr Leu Leu Ile Ser Ala	130	135	140
Pro Leu Trp Ile Lys His Ile Ser Asp Glu Gln Ile Leu Gly Phe Val	145	150	155
Glu Asn Leu Met Val Ala Val Phe Lys Ala Ala Ser Pro Leu Gly Ser	165	170	175
Pro Glu Leu Cys Pro Ser Ala Leu His Gly Leu Ser Gln Ala Met Lys	180	185	190
Leu Pro Ser Pro Ala His His Leu Trp Ser Leu Leu Ser Glu Ala Thr	195	200	205
Gly Lys Ile Phe Asp Leu Leu Pro Asn Lys Ile Arg Arg Lys Asp Leu	210	215	220
Glu Leu Tyr Ile Ser Ile Ala Lys Cys Leu Leu Glu Met Thr Asp Asp	225	230	235
Asp Ala Asn Xaa Asp Arg Pro Gly Tyr	245		

&lt;210&gt; 1149

&lt;211&gt; 239

1158

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1149

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Arg Asp Pro Pro Arg Pro Val Gln Ser Gly Leu Gly Ala Ala Gly Thr
 1             5             10             15

Leu Ser Trp Leu Pro Pro Pro Glu Gln Pro Val Leu Val Pro Arg Leu
      20             25             30

Pro Ala Pro Arg Pro Val Met Thr Leu Arg Pro Ser Leu Leu Pro Leu
      35             40             45

His Leu Leu Leu Leu Leu Leu Ser Ala Ala Val Cys Arg Ala Glu
      50             55             60

Ala Gly Leu Glu Thr Glu Ser Pro Val Arg Thr Leu Gln Val Glu Thr
      65             70             75             80

Leu Val Glu Pro Pro Glu Pro Cys Ala Glu Pro Ala Ala Phe Gly Asp
      85             90             95

Thr Leu His Ile His Tyr Thr Gly Ser Leu Val Asp Gly Arg Ile Ile
      100            105            110

Asp Thr Ser Leu Thr Arg Asp Pro Leu Val Ile Glu Leu Gly Gln Lys
      115            120            125

Gln Val Ile Pro Gly Leu Glu Gln Ser Leu Leu Asp Met Cys Val Gly
      130            135            140

Glu Lys Arg Arg Ala Ile Ile Pro Ser His Leu Ala Tyr Gly Lys Arg
      145            150            155            160

Gly Phe Pro Pro Ser Val Pro Ala Asp Ala Val Val Gln Tyr Asp Val
      165            170            175

Glu Leu Ile Ala Leu Ile Arg Ala Asn Tyr Trp Leu Lys Leu Val Lys
      180            185            190

Gly Ile Leu Pro Leu Val Gly Met Ala Met Val Pro Ala Leu Leu Gly
      195            200            205

Leu Ile Gly Tyr His Leu Tyr Arg Lys Ala Asn Arg Pro Lys Val Ser
      210            215            220

Lys Lys Lys Leu Lys Glu Glu Lys Arg Asn Lys Ser Lys Lys Lys
      225            230            235

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1159

&lt;210&gt; 1150

&lt;211&gt; 394

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1150

Ala Glu Xaa Gly Lys Thr Glu Trp Leu Phe Gly Met Asp Glu Gly Arg  
 1 5 10 15

Lys Gln Leu Ala Ala Ser Ala Gly Phe Arg Arg Leu Ile Thr Val Ala  
 20 25 30

Leu His Arg Gly Gln Gln Tyr Glu Ser Met Asp His Ile Gln Ala Glu  
 35 40 45

Leu Ser Ala Arg Val Met Glu Leu Ala Pro Ala Gly Met Pro Thr Gln  
 50 55 60

Gln Gln Val Pro Phe Leu Ser Val Gly Gly Asp Ile Gly Val Arg Thr  
 65 70 75 80

Val Gln His Gln Asp Cys Ser Pro Leu Ser Gly Asp Tyr Val Ile Glu  
 85 90 95

Asp Val Gln Gly Asp Asp Lys Arg Tyr Phe Arg Arg Leu Ile Phe Leu  
 100 105 110

Ser Asn Arg Asn Val Val Gln Ser Glu Ala Arg Leu Leu Lys Asp Val  
 115 120 125

Ser His Lys Ala Gln Lys Lys Arg Lys Lys Asp Arg Lys Lys Gln Arg  
 130 135 140

Pro Ala Asp Ala Glu Asp Leu Pro Ala Ala Pro Gly Gln Ser Ile Asp  
 145 150 155 160

Lys Ser Tyr Leu Cys Cys Glu His His Lys Ala Met Ile Ala Gly Leu  
 165 170 175

Ala Leu Leu Arg Asn Pro Glu Leu Leu Leu Glu Ile Pro Leu Ala Leu  
 180 185 190

Leu Val Val Gly Leu Gly Gly Gly Ser Leu Pro Leu Phe Val His Asp  
 195 200 205

His Phe Pro Lys Ser Cys Ile Asp Ala Val Glu Ile Asp Pro Ser Met

1160

210                      215                      220  
 Leu Glu Val Ala Thr Gln Trp Phe Gly Phe Ser Gln Ser Asp Arg Met  
 225                      230                      235                      240  
 Lys Val His Ile Ala Asp Gly Leu Asp Tyr Ile Ala Ser Leu Ala Gly  
                     245                      250                      255  
 Gly Gly Glu Ala Arg Pro Cys Tyr Asp Val Ile Met Phe Asp Val Asp  
                     260                      265                      270  
 Ser Lys Asp Pro Thr Leu Gly Met Ser Cys Pro Pro Pro Ala Phe Val  
                     275                      280                      285  
 Glu Gln Ser Phe Leu Gln Lys Val Lys Ser Ile Leu Thr Pro Glu Gly  
                     290                      295                      300  
 Val Phe Ile Leu Asn Leu Val Cys Arg Asp Leu Gly Leu Lys Asp Ser  
 305                      310                      315                      320  
 Val Leu Ala Gly Leu Lys Ala Val Phe Pro Leu Leu Tyr Val Arg Arg  
                     325                      330                      335  
 Ile Glu Gly Glu Val Asn Glu Ile Leu Phe Cys Gln Leu His Pro Glu  
                     340                      345                      350  
 Gln Lys Leu Ala Thr Pro Glu Leu Leu Glu Thr Ala Gln Ala Leu Glu  
                     355                      360                      365  
 Arg Thr Leu Arg Lys Pro Gly Arg Gly Trp Asp Asp Thr Tyr Val Leu  
                     370                      375                      380  
 Ser Asp Met Leu Lys Thr Val Lys Ile Val  
 385                      390

&lt;210&gt; 1151

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1151

Val Asn Val Asn Asn Pro Ser Leu Cys His Ser Ser His Leu Val Asp  
 1                      5                      10                      15  
 Leu Gly Ser Gly Ser Val Glu Phe Cys Ala Trp Glu Trp Ser Trp Arg  
                     20                      25                      30  
 Glu Trp Gly Leu Cys Thr Ala Ala Thr Ser Pro Arg Ser Ser His Leu  
                     35                      40                      45

1161

Pro Ala Pro Arg Pro Gly Cys Met Ala Ala Pro Val Cys Val Gln Arg  
 50 55 60

Ser Val Ser His Pro Leu His Leu Leu Ser Gly Gly Leu Gly Ser Pro  
 65 70 75 80

Thr Cys Cys Gln Asp Leu Gly Ala Ile Lys Tyr Ser Gly Phe Val Lys  
 85 90 95

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
 100 105 110

&lt;210&gt; 1152

&lt;211&gt; 172

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1152

Leu Gly Asp Thr Ile Glu Gly Arg Leu Gln Val Pro Val Arg Asn Ser  
 1 5 10 15

Arg Val Asp Pro Arg Val Arg Ala Arg Gly Ala Asp Arg Met Gly Lys  
 20 25 30

Cys Arg Gly Leu Arg Thr Ala Arg Lys Leu Arg Ser His Arg Arg Asp  
 35 40 45

Gln Lys Trp His Asp Lys Gln Tyr Lys Lys Ala His Leu Gly Thr Ala  
 50 55 60

Leu Lys Ala Asn Pro Phe Gly Gly Ala Ser His Ala Lys Gly Ile Val  
 65 70 75 80

Leu Glu Lys Val Gly Val Glu Ala Lys Gln Pro Asn Ser Ala Ile Arg  
 85 90 95

Lys Cys Val Arg Val Gln Leu Ile Lys Asn Gly Lys Lys Ile Thr Ala  
 100 105 110

Phe Val Pro Asn Asp Gly Cys Leu Asn Phe Ile Glu Glu Asn Asp Glu  
 115 120 125

Val Leu Val Ala Gly Phe Gly Arg Lys Gly His Ala Val Gly Asp Ile  
 130 135 140

Pro Gly Val Arg Phe Lys Val Val Lys Val Ala Asn Val Ser Leu Leu  
 145 150 155 160



1162

Ala Leu Tyr Lys Gly Lys Lys Glu Arg Pro Arg Ser  
 165 170

&lt;210&gt; 1153

&lt;211&gt; 197

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1153

Tyr Trp Cys Glu Gln Cys Asp Val Gln Phe Ser Ser Ser Ser Glu Leu  
 1 5 10 15

Tyr Leu His Phe Gln Glu His Ser Cys Asp Glu Gln Tyr Leu Cys Gln  
 20 25 30

Phe Cys Glu His Glu Thr Asn Asp Pro Glu Asp Leu His Ser His Val  
 35 40 45

Val Asn Glu His Ala Cys Lys Leu Ile Glu Leu Ser Asp Lys Tyr Asn  
 50 55 60

Asn Gly Glu His Gly Gln Tyr Ser Leu Leu Ser Lys Ile Thr Phe Asp  
 65 70 75 80

Lys Cys Lys Asn Phe Phe Val Cys Gln Val Cys Gly Phe Arg Ser Arg  
 85 90 95

Leu His Thr Asn Val Asn Arg His Val Ala Ile Glu His Thr Lys Ile  
 100 105 110

Phe Pro His Val Cys Asp Asp Cys Gly Lys Gly Phe Ser Ser Met Leu  
 115 120 125

Glu Tyr Cys Lys His Leu Asn Ser His Leu Ser Glu Gly Ile Tyr Leu  
 130 135 140

Cys Gln Tyr Cys Glu Tyr Ser Thr Gly Gln Ile Glu Asp Leu Lys Ile  
 145 150 155 160

His Leu Asp Phe Lys His Ser Ala Asp Leu Pro His Lys Cys Ser Asp  
 165 170 175

Cys Leu Met Arg Phe Gly Asn Glu Arg Glu Leu Ile Ser His Leu Pro  
 180 185 190

Val His Glu Thr Thr  
 195

1163

&lt;210&gt; 1154

&lt;211&gt; 156

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1154

Pro Ala Lys Glu Arg Arg Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser  
1 5 10 15

Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Gly  
20 25 30

Ser Ser Ser Ser Asp Ser Glu Gly Ser Ser Leu Pro Val Gln Pro Glu  
35 40 45

Val Ala Leu Lys Arg Val Pro Ser Pro Thr Pro Ala Pro Lys Glu Ala  
50 55 60

Val Arg Glu Gly Arg Pro Pro Glu Pro Thr Pro Ala Lys Arg Lys Arg  
65 70 75 80

Arg Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser  
85 90 95

Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser  
100 105 110

Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Pro Ser Pro Ala Lys  
115 120 125

Pro Gly Pro Gln Ala Cys Pro Asn Leu Gln Ala Pro Arg Ser His Pro  
130 135 140

Leu Ala Ser Gly Gly Pro Ala Ala Pro Gly Ser Gln  
145 150 155

&lt;210&gt; 1155

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (73)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1164

&lt;222&gt; (105)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1155

Pro Glu Ala Pro Arg Gly Val Val Thr Cys Leu Arg Ala Leu Leu Ser  
 1 5 10 15

His Gln His Gln Thr Arg Pro His Arg Val Pro Gly Thr Met Phe Gly  
 20 25 30

Lys Arg Lys Lys Arg Val Glu Ile Ser Ala Pro Ser Asn Phe Glu His  
 35 40 45

Arg Val His Thr Gly Phe Asp Gln His Glu Gln Lys Phe Thr Gly Leu  
 50 55 60

Pro Arg Gln Trp Gln Ser Leu Ile Xaa Glu Ser Ala Arg Arg Pro Lys  
 65 70 75 80

Pro Leu Val Asp Pro Ala Cys Ile Thr Ser Ile Gln Pro Gly Ala Pro  
 85 90 95

Lys Thr Ile Val Arg Gly Ser Lys Xaa Ala Lys Asp Gly Ala Leu Thr  
 100 105 110

Leu Leu Leu Asp Glu Phe Glu Asn Met Xaa Val Thr Arg  
 115 120 125

&lt;210&gt; 1156

&lt;211&gt; 202

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1156

Arg Pro Thr Arg Pro Gln Pro Ser Pro Asp Glu Ala Arg Pro Leu Gln  
 1 5 10 15

Ala Leu Leu Asp Gly Arg Gly Leu Cys Val Asn Ala Ser Ala Val Ser  
 20 25 30

Arg Leu Arg Ala Tyr Leu Leu Pro Ala Pro Pro Ala Pro Gly Asn Ala  
 35 40 45

Ser Glu Ser Glu Glu Asp Arg Ser Ala Gly Ser Val Glu Ser Pro Ser

1165

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      50              55              60
Val Ser Ser Thr His Arg Val Ser Asp Pro Lys Phe His Pro Leu His
 65              70              75              80
Ser Lys Ile Ile Ile Ile Lys Lys Gly His Ala Lys Asp Ser Gln Arg
      85              90              95
Tyr Lys Val Asp Tyr Glu Ser Gln Ser Thr Asp Thr Gln Asn Phe Ser
      100             105             110
Ser Glu Ser Lys Arg Glu Thr Glu Tyr Gly Pro Cys Arg Arg Glu Met
      115             120             125
Glu Asp Thr Leu Asn His Leu Lys Phe Leu Asn Val Leu Ser Pro Arg
      130             135             140
Gly Val His Ile Pro Asn Cys Asp Lys Lys Gly Phe Tyr Lys Lys Lys
      145             150             155             160
Gln Cys Arg Pro Ser Lys Gly Arg Lys Arg Gly Phe Cys Trp Cys Val
      165             170             175
Asp Lys Tyr Gly Gln Pro Leu Pro Gly Tyr Thr Thr Lys Gly Lys Glu
      180             185             190
Asp Val His Cys Tyr Ser Met Gln Ser Lys
      195             200

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&lt;210&gt; 1157

&lt;211&gt; 269

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1157

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Arg Arg Cys Cys His Ser Ala Thr Met Phe Glu Ala Arg Leu Val Gln
 1              5              10              15
Gly Ser Ile Leu Lys Lys Val Leu Glu Ala Leu Lys Asp Leu Ile Asn
      20              25              30
Glu Ala Cys Trp Asp Ile Ser Ser Ser Gly Val Asn Leu Gln Ser Met
      35              40              45
Asp Ser Ser His Val Ser Leu Val Gln Leu Thr Leu Arg Ser Glu Gly
      50              55              60
Phe Asp Thr Tyr Arg Cys Asp Arg Asn Leu Ala Met Gly Val Asn Leu
      65              70              75              80

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1166

Thr Ser Met Ser Lys Ile Leu Lys Cys Ala Gly Asn Glu Asp Ile Ile  
                             85                            90                            95  
 Thr Leu Arg Ala Glu Asp Asn Ala Asp Thr Leu Ala Leu Val Phe Glu  
                             100                            105                            110  
 Ala Pro Asn Gln Glu Lys Val Ser Asp Tyr Glu Met Lys Leu Met Asp  
                             115                            120                            125  
 Leu Asp Val Glu Gln Leu Gly Ile Pro Glu Gln Glu Tyr Ser Cys Val  
                             130                            135                            140  
 Val Lys Met Pro Ser Gly Glu Phe Ala Arg Ile Cys Arg Asp Leu Ser  
                             145                            150                            155                            160  
 His Ile Gly Asp Ala Val Val Ile Ser Cys Ala Lys Asp Gly Val Lys  
                             165                            170                            175  
 Phe Ser Ala Ser Gly Glu Leu Gly Asn Gly Asn Ile Lys Leu Ser Gln  
                             180                            185                            190  
 Thr Ser Asn Val Asp Lys Glu Glu Glu Ala Val Thr Ile Glu Met Asn  
                             195                            200                            205  
 Glu Pro Val Gln Leu Thr Phe Ala Leu Arg Tyr Leu Asn Phe Phe Thr  
                             210                            215                            220  
 Lys Ala Thr Pro Leu Ser Ser Thr Val Thr Leu Ser Met Ser Ala Asp  
                             225                            230                            235                            240  
 Val Pro Leu Val Val Glu Tyr Lys Ile Ala Asp Met Gly His Leu Lys  
                             245                            250                            255  
 Tyr Tyr Leu Ala Pro Lys Ile Glu Asp Glu Glu Gly Ser  
                             260                            265

&lt;210&gt; 1158

&lt;211&gt; 639

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (129)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1167

&lt;222&gt; (150)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1158

Met Asp Glu Met Ala Thr Thr Gln Ile Ser Lys Asp Glu Leu Asp Glu  
 1 5 10 15

Leu Lys Glu Ala Phe Ala Lys Val Asp Leu Asn Ser Asn Gly Phe Ile  
 20 25 30

Cys Asp Tyr Glu Leu His Glu Leu Phe Lys Glu Ala Asn Met Pro Leu  
 35 40 45

Pro Gly Tyr Lys Val Arg Glu Ile Ile Gln Lys Leu Met Leu Asp Gly  
 50 55 60

Asp Arg Asn Lys Asp Gly Lys Ile Ser Phe Asp Glu Phe Val Tyr Ile  
 65 70 75 80

Phe Gln Glu Val Lys Ser Ser Asp Ile Ala Lys Thr Phe Arg Lys Ala  
 85 90 95

Ile Asn Arg Lys Glu Gly Ile Cys Ala Leu Gly Gly Thr Ser Glu Leu  
 100 105 110

Ser Ser Glu Gly Thr Gln His Ser Tyr Ser Glu Glu Glu Lys Tyr Ala  
 115 120 125

Xaa Val Asn Trp Ile Asn Lys Ala Leu Glu Asn Asp Pro Asp Cys Arg  
 130 135 140

His Val Ile Pro Met Xaa Pro Asn Thr Asp Asp Leu Phe Lys Ala Val  
 145 150 155 160

Gly Asp Gly Ile Val Leu Cys Lys Met Ile Asn Leu Ser Val Pro Asp  
 165 170 175

Thr Ile Asp Glu Arg Ala Ile Asn Lys Lys Lys Leu Thr Pro Phe Ile  
 180 185 190

Ile Gln Glu Asn Leu Asn Leu Ala Leu Asn Ser Ala Ser Ala Ile Gly  
 195 200 205

Cys His Val Val Asn Ile Gly Ala Glu Asp Leu Arg Ala Gly Lys Pro  
 210 215 220

His Leu Val Leu Gly Leu Leu Trp Gln Ile Ile Lys Ile Gly Leu Phe  
 225 230 235 240

Ala Asp Ile Glu Leu Ser Arg Asn Glu Ala Leu Ala Ala Leu Leu Arg  
 245 250 255

1168

Asp Gly Glu Thr Leu Glu Glu Leu Met Lys Leu Ser Pro Glu Glu Leu  
 260 265 270  
 Leu Leu Arg Trp Ala Asn Phe His Leu Glu Asn Ser Gly Trp Gln Lys  
 275 280 285  
 Ile Asn Asn Phe Ser Ala Asp Ile Lys Leu Ile Asp Phe Ser Asn Ser  
 290 295 300  
 Val Lys Asp Ser Lys Ala Tyr Phe His Leu Leu Asn Gln Ile Ala Pro  
 305 310 315 320  
 Lys Gly Gln Lys Glu Gly Glu Pro Arg Ile Asp Ile Asn Met Ser Gly  
 325 330 335  
 Phe Asn Glu Thr Asp Asp Leu Lys Arg Ala Glu Ser Met Leu Gln Gln  
 340 345 350  
 Ala Asp Lys Leu Gly Cys Arg Gln Phe Val Thr Pro Ala Asp Val Val  
 355 360 365  
 Ser Gly Asn Pro Lys Leu Asn Leu Ala Phe Val Ala Asn Leu Phe Asn  
 370 375 380  
 Lys Tyr Pro Ala Leu Thr Lys Pro Glu Asn Gln Asp Ile Asp Trp Thr  
 385 390 395 400  
 Leu Leu Glu Gly Glu Thr Arg Glu Glu Arg Thr Phe Arg Asn Trp Met  
 405 410 415  
 Asn Ser Leu Gly Val Asn Pro His Val Asn His Leu Tyr Ala Asp Leu  
 420 425 430  
 Gln Asp Ala Leu Val Ile Leu Gln Leu Tyr Glu Arg Ile Lys Val Pro  
 435 440 445  
 Val Asp Trp Ser Lys Val Asn Lys Pro Pro Tyr Pro Lys Leu Gly Ala  
 450 455 460  
 Asn Met Lys Lys Leu Glu Asn Cys Asn Tyr Ala Val Glu Leu Gly Lys  
 465 470 475 480  
 His Pro Ala Lys Phe Ser Leu Val Gly Ile Gly Gly Gln Asp Leu Asn  
 485 490 495  
 Asp Gly Asn Gln Thr Leu Thr Leu Ala Leu Val Trp Gln Leu Met Arg  
 500 505 510  
 Arg Tyr Thr Leu Asn Val Leu Glu Asp Leu Gly Asp Gly Gln Lys Ala  
 515 520 525

1169

Asn Asp Asp Ile Ile Val Asn Trp Val Asn Arg Thr Leu Ser Glu Ala  
 530 535 540

Gly Lys Ser Thr Ser Ile Gln Ser Phe Lys Asp Lys Thr Ile Ser Ser  
 545 550 555 560

Ser Leu Ala Val Val Asp Leu Ile Asp Ala Ile Gln Pro Gly Cys Ile  
 565 570 575

Asn Tyr Asp Leu Val Lys Ser Gly Asn Leu Thr Glu Asp Asp Lys His  
 580 585 590

Asn Asn Ala Lys Tyr Ala Val Ser Met Ala Arg Arg Ile Gly Ala Arg  
 595 600 605

Val Tyr Ala Leu Pro Glu Asp Leu Val Glu Val Lys Pro Lys Met Val  
 610 615 620

Met Thr Val Phe Ala Cys Leu Met Gly Arg Gly Met Lys Arg Val  
 625 630 635

&lt;210&gt; 1159

&lt;211&gt; 63

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1159

Thr Ile Trp Pro Leu Asn Phe His Arg Lys Asn Asp Pro Thr Phe Leu  
 1 5 10 15

Ser Met Ser Tyr Leu Ile Ser Arg Ser Trp Asp Gly Leu Thr Ile Leu  
 20 25 30

Val Tyr Ile Leu Asp Thr Glu Arg Cys Tyr Ala Ser Val Ile Ile Pro  
 35 40 45

Arg Leu Glu Ile Gly Arg Ala Lys Lys Val Leu Leu Phe Phe Leu  
 50 55 60

&lt;210&gt; 1160

&lt;211&gt; 207

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1160

Glu Val Tyr Gly Gly Ser Leu Asp Lys Glu Phe Asp Glu Ser Ser Pro



1170

1	5	10	15
Lys Gln Pro Thr Asn Pro Tyr Ala Ser Ser Lys Ala Ala Ala Glu Cys	20	25	30
Phe Val Gln Ser Tyr Trp Glu Gln Tyr Lys Phe Pro Val Val Ile Thr	35	40	45
Arg Ser Ser Asn Val Tyr Gly Pro His Gln Tyr Pro Glu Lys Val Ile	50	55	60
Pro Lys Phe Ile Ser Leu Leu Gln His Asn Arg Lys Cys Cys Ile His	65	70	75
Gly Ser Gly Leu Gln Thr Arg Asn Phe Leu Tyr Ala Thr Asp Val Val	85	90	95
Glu Ala Phe Leu Thr Val Leu Lys Lys Gly Lys Pro Gly Glu Ile Tyr	100	105	110
Asn Ile Gly Thr Asn Phe Glu Met Ser Val Val Gln Leu Ala Lys Glu	115	120	125
Leu Ile Gln Leu Ile Lys Glu Thr Asn Ser Glu Ser Glu Met Glu Asn	130	135	140
Trp Val Asp Tyr Val Asn Asp Arg Pro Thr Asn Asp Met Arg Tyr Pro	145	150	155
Met Lys Ser Glu Lys Ile His Gly Leu Gly Trp Arg Pro Lys Val Pro	165	170	175
Trp Lys Glu Gly Ile Lys Lys Thr Ile Glu Trp Tyr Arg Glu Asn Phe	180	185	190
His Asn Trp Lys Asn Val Glu Lys Ala Leu Glu Pro Phe Pro Val	195	200	205

&lt;210&gt; 1161

&lt;211&gt; 848

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (815)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1171

&lt;221&gt; SITE

&lt;222&gt; (844)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1161

Ala Leu Gly Leu Gly Val Thr Met Ala Thr Glu Glu Phe Ile Ile Arg  
 1 5 10 15

Ile Pro Pro Tyr His Tyr Ile His Val Leu Asp Gln Asn Ser Asn Val  
 20 25 30

Ser Arg Val Glu Val Gly Pro Lys Thr Tyr Ile Arg Gln Asp Asn Glu  
 35 40 45

Arg Val Leu Phe Ala Pro Met Arg Met Val Thr Val Pro Pro Arg His  
 50 55 60

Tyr Cys Thr Val Ala Asn Pro Val Ser Arg Asp Ala Gln Gly Leu Val  
 65 70 75 80

Leu Phe Asp Val Thr Gly Gln Val Arg Leu Arg His Ala Asp Leu Glu  
 85 90 95

Ile Arg Leu Ala Gln Asp Pro Phe Pro Leu Tyr Pro Gly Glu Val Leu  
 100 105 110

Glu Lys Asp Ile Thr Pro Leu Gln Val Val Leu Pro Asn Thr Ala Leu  
 115 120 125

His Leu Lys Ala Leu Leu Asp Phe Glu Asp Lys Asp Gly Asp Lys Val  
 130 135 140

Val Ala Gly Asp Glu Trp Leu Phe Glu Gly Pro Gly Thr Tyr Ile Pro  
 145 150 155 160

Arg Lys Glu Val Glu Val Val Glu Ile Ile Gln Ala Thr Ile Ile Arg  
 165 170 175

Gln Asn Gln Ala Leu Arg Leu Arg Ala Arg Lys Glu Cys Trp Asp Arg  
 180 185 190

Asp Gly Lys Glu Arg Val Thr Gly Glu Glu Trp Leu Val Thr Thr Val  
 195 200 205

Gly Ala Tyr Leu Pro Ala Val Phe Glu Glu Val Leu Asp Leu Val Asp  
 210 215 220

Ala Val Ile Leu Thr Glu Lys Thr Ala Leu His Leu Arg Ala Arg Arg  
 225 230 235 240

Asn Phe Arg Asp Phe Arg Gly Val Ser Arg Arg Thr Gly Glu Glu Trp

1172

	245		250		255
Leu Val Thr	Val Gln Asp Thr	Glu Ala His Val	Pro Asp	Val His Glu	
	260	265		270	
Glu Val Leu	Gly Val Val Pro	Ile Thr Thr Leu	Gly Pro His Asn Tyr		
	275	280	285		
Cys Val Ile	Leu Asp Pro Val	Gly Pro Asp Gly	Lys Asn Gln Leu Gly		
	290	295	300		
Gln Lys Arg	Val Val Lys Gly	Glu Lys Ser Phe	Phe Leu Gln Pro Gly		
305	310	315	320		
Glu Gln Leu	Glu Gln Gly Ile	Gln Asp Val Tyr	Val Leu Ser Glu Gln		
	325	330	335		
Gln Gly Leu	Leu Leu Arg Ala	Leu Gln Pro Leu	Glu Glu Gly Glu Asp		
	340	345	350		
Glu Glu Lys	Val Ser His Gln	Ala Gly Asp His	Trp Leu Ile Arg Gly		
	355	360	365		
Pro Leu Glu	Tyr Val Pro Ser	Ala Lys Val Glu	Val Val Glu Glu Arg		
	370	375	380		
Gln Ala Ile	Pro Leu Asp Glu	Asn Glu Gly Ile	Tyr Val Gln Asp Val		
385	390	395	400		
Lys Thr Gly	Lys Val Arg Ala	Val Ile Gly Ser	Thr Tyr Met Leu Thr		
	405	410	415		
Gln Asp Glu	Val Leu Trp Glu	Lys Glu Leu Pro	Pro Gly Val Glu Glu		
	420	425	430		
Leu Leu Asn	Lys Gly Gln Asp	Pro Leu Ala Asp	Arg Gly Glu Lys Asp		
	435	440	445		
Thr Ala Lys	Ser Leu Gln Pro	Leu Ala Pro Arg	Asn Lys Thr Arg Val		
	450	455	460		
Val Ser Tyr	Arg Val Pro His	Asn Ala Ala Val	Gln Val Tyr Asp Tyr		
465	470	475	480		
Arg Glu Lys	Arg Ala Arg Val	Val Phe Gly Pro	Glu Leu Val Ser Leu		
	485	490	495		
Gly Pro Glu	Glu Gln Phe Thr	Val Leu Ser Leu	Ser Ala Gly Arg Pro		
	500	505	510		
Lys Arg Pro	His Ala Arg Arg	Ala Leu Cys Leu	Leu Leu Gly Pro Asp		

1173

515	520	525
Phe Phe Thr Asp Val Ile Thr Ile Glu Thr Ala Asp His Ala Arg Leu		
530	535	540
Gln Leu Gln Leu Ala Tyr Asn Trp His Phe Glu Val Asn Asp Arg Lys		
545	550	555
Asp Pro Gln Glu Thr Ala Lys Leu Phe Ser Val Pro Asp Phe Val Gly		
	565	570
		575
Asp Ala Cys Lys Ala Ile Ala Ser Arg Val Arg Gly Ala Val Ala Ser		
	580	585
		590
Val Thr Phe Asp Asp Phe His Lys Asn Ser Ala Arg Ile Ile Arg Thr		
	595	600
		605
Ala Val Phe Gly Phe Glu Thr Ser Glu Ala Lys Gly Pro Asp Gly Met		
610	615	620
Ala Leu Pro Arg Pro Arg Asp Gln Ala Val Phe Pro Gln Asn Gly Leu		
625	630	635
		640
Val Val Ser Ser Val Asp Val Gln Ser Val Glu Pro Val Asp Gln Arg		
	645	650
		655
Thr Arg Asp Ala Leu Gln Arg Ser Val Gln Leu Ala Ile Glu Ile Thr		
	660	665
		670
Thr Asn Ser Gln Glu Ala Ala Ala Lys His Glu Ala Gln Arg Leu Glu		
	675	680
		685
Gln Glu Ala Arg Gly Arg Leu Glu Arg Gln Lys Ile Leu Asp Gln Ser		
690	695	700
Glu Ala Glu Lys Ala Arg Lys Glu Leu Leu Glu Leu Glu Ala Leu Ser		
705	710	715
		720
Met Ala Val Glu Ser Thr Gly Thr Ala Lys Ala Glu Ala Glu Ser Arg		
	725	730
		735
Ala Glu Ala Ala Arg Ile Glu Gly Glu Gly Ser Val Leu Gln Ala Lys		
	740	745
		750
Leu Lys Ala Gln Ala Leu Ala Ile Glu Thr Glu Ala Glu Leu Gln Arg		
	755	760
		765
Val Gln Lys Val Arg Glu Leu Glu Leu Val Tyr Ala Arg Ala Gln Leu		
770	775	780
Glu Leu Glu Val Ser Lys Ala Gln Gln Leu Ala Glu Val Glu Val Lys		

1174

785		790		795		800
Lys Phe Lys Gln Met Thr Glu Ala Ile Gly Pro Ser Thr Ile Xaa Asp						
	805		810		815	
Leu Ala Val Ala Gly Pro Glu Met Gln Val Lys Leu Leu Gln Ser Leu						
	820		825		830	
Gly Leu Lys Ser Thr Leu Ile Thr Asp Gly Phe Xaa Ser Ile Asn Phe						
	835		840		845	

&lt;210&gt; 1162

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1162

Phe Xaa Val Gly Ile Val Asn Phe Ser Gln Pro Pro His Ala Ala Gly
1 5 10 15

Glu Cys Gly Cys Ser Ser Ser Glu Met Leu Thr Xaa Lys Arg Glu Val
20 25 30

Lys Gln Ser Arg Tyr Val Gln Pro Cys Leu Gln Asn Pro Ser Leu Ser
35 40 45

Ser Leu Ile Arg Ser Phe Leu Val Phe Tyr
50 55

&lt;210&gt; 1163

&lt;211&gt; 565

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1175

&lt;400&gt; 1163

Ile Pro Gly Ser Thr His Ala Ser Ala Gly Asn Leu Asp Ser Pro Glu  
 1 5 10 15

Gly Gly Phe Asp Ala Ile Met Gln Val Ala Val Cys Gly Ser Leu Ile  
 20 25 30

Gly Trp Arg Asn Val Thr Arg Leu Leu Val Phe Ser Thr Asp Ala Gly  
 35 40 45

Phe His Phe Ala Gly Asp Gly Lys Leu Gly Gly Ile Val Leu Pro Asn  
 50 55 60

Asp Gly Gln Cys His Leu Glu Asn Asn Met Tyr Thr Met Ser His Tyr  
 65 70 75 80

Tyr Asp Tyr Pro Ser Ile Ala His Leu Val Gln Lys Leu Ser Glu Asn  
 85 90 95

Asn Ile Gln Thr Ile Phe Ala Val Thr Glu Glu Phe Gln Pro Val Tyr  
 100 105 110

Lys Glu Leu Lys Asn Leu Ile Pro Lys Ser Ala Val Gly Thr Leu Ser  
 115 120 125

Ala Asn Ser Ser Asn Val Ile Gln Leu Ile Ile Asp Ala Tyr Asn Ser  
 130 135 140

Leu Ser Ser Glu Val Ile Leu Glu Asn Gly Lys Leu Ser Glu Gly Val  
 145 150 155 160

Thr Ile Ser Tyr Lys Ser Tyr Cys Lys Asn Gly Val Asn Gly Thr Gly  
 165 170 175

Glu Asn Gly Arg Lys Cys Ser Asn Ile Ser Ile Gly Asp Glu Val Gln  
 180 185 190

Phe Glu Ile Ser Ile Thr Ser Asn Lys Cys Pro Lys Lys Asp Ser Asp  
 195 200 205

Ser Phe Lys Ile Arg Pro Leu Gly Phe Thr Glu Glu Val Glu Val Ile  
 210 215 220

Leu Gln Tyr Ile Cys Glu Cys Glu Cys Gln Ser Glu Gly Ile Pro Glu  
 225 230 235 240

Ser Pro Lys Cys His Glu Gly Asn Gly Thr Phe Glu Cys Gly Ala Cys  
 245 250 255

Arg Cys Asn Glu Gly Arg Val Gly Arg His Cys Glu Cys Ser Thr Asp  
 260 265 270

1176

Glu Val Asn Ser Glu Asp Met Asp Ala Tyr Cys Arg Lys Glu Asn Ser  
 275 280 285

Ser Glu Ile Cys Ser Asn Asn Gly Glu Cys Val Cys Gly Gln Cys Val  
 290 295 300

Cys Arg Lys Arg Asp Asn Thr Asn Glu Ile Tyr Ser Gly Lys Phe Cys  
 305 310 315 320

Glu Cys Asp Asn Phe Asn Cys Asp Arg Ser Asn Gly Leu Ile Cys Gly  
 325 330 335

Gly Asn Gly Val Cys Lys Cys Arg Val Cys Glu Cys Asn Pro Asn Tyr  
 340 345 350

Thr Gly Ser Ala Cys Asp Cys Ser Leu Asp Thr Ser Thr Cys Glu Ala  
 355 360 365

Ser Asn Gly Gln Ile Cys Asn Gly Arg Gly Ile Cys Glu Cys Gly Val  
 370 375 380

Cys Lys Cys Thr Asp Pro Lys Phe Gln Gly Gln Thr Cys Glu Met Cys  
 385 390 395 400

Gln Thr Cys Leu Gly Val Cys Ala Glu His Lys Glu Cys Val Gln Cys  
 405 410 415

Arg Ala Phe Asn Lys Gly Glu Lys Lys Asp Thr Cys Thr Gln Glu Cys  
 420 425 430

Ser Tyr Phe Asn Ile Thr Lys Val Glu Ser Arg Asp Lys Leu Pro Gln  
 435 440 445

Pro Val Gln Pro Asp Pro Val Ser His Cys Lys Glu Lys Asp Val Asp  
 450 455 460

Asp Cys Trp Phe Tyr Phe Thr Tyr Ser Val Asn Gly Asn Asn Glu Val  
 465 470 475 480

Met Val His Val Val Glu Asn Pro Glu Cys Pro Thr Gly Pro Asp Ile  
 485 490 495

Ile Pro Ile Val Ala Gly Val Val Ala Gly Ile Val Leu Ile Gly Leu  
 500 505 510

Ala Leu Leu Leu Ile Trp Lys Leu Leu Met Ile Ile His Asp Arg Arg  
 515 520 525

Glu Phe Ala Lys Phe Glu Lys Glu Lys Met Asn Ala Lys Trp Asp Thr  
 530 535 540

1177

Gly Glu Asn Pro Ile Tyr Lys Ser Ala Val Thr Thr Val Val Asn Pro  
 545 550 555 560

Lys Tyr Glu Gly Lys  
 565

&lt;210&gt; 1164

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1164

Gly Thr Ala Gly Gly Ala Gly Gly Gln Arg Glu Val Arg Gly Cys Ser  
 1 5 10 15

Ala Gln Glu Thr Met Ser Gly Gly Ser Ser Cys Ser Gln Thr Pro Ser  
 20 25 30

Arg Ala Ile Pro Ala Thr Arg Arg Val Val Leu Gly Asp Gly Val Gln  
 35 40 45

Leu Pro Pro Gly Asp Tyr Ser Thr Thr Pro Gly Gly Thr Leu Phe Ser  
 50 55 60

Thr Thr Pro Gly Gly Thr Arg Ile Ile Tyr Asp Arg Lys Phe Leu Met  
 65 70 75 80

Glu Cys Arg Asn Ser Pro Val Thr Lys Thr Pro Pro Arg Asp Leu Pro  
 85 90 95

Thr Ile Pro Gly Val Thr Ser Pro Ser Ser Asp Glu Pro Pro Met Glu  
 100 105 110

Ala Ser Gln Ser His Leu Arg Asn Ser Pro Glu Asp Lys Arg Ala Gly  
 115 120 125

Gly Glu Glu Ser Gln Phe Glu Met Asp Ile  
 130 135

&lt;210&gt; 1165

&lt;211&gt; 407

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1165

Ala Ala Cys Gln Pro Arg Cys Cys Cys Ser Ser Cys Cys Gly Thr Ala



1178

1	5	10	15
Asp Arg Ala	Ala Ala Pro Leu Ser	Pro Leu Gln Ala Pro	Ile Trp Ala
	20	25	30
Pro Ala Thr	Ser Met Asp Ala Arg	Arg Val Pro Gln Lys	Asp Leu Arg
	35	40	45
Val Lys Lys	Asn Leu Lys Lys Phe	Arg Tyr Val Lys Leu	Ile Ser Met
	50	55	60
Glu Thr Ser	Ser Ser Ser Asp Asp	Ser Cys Asp Ser Phe	Ala Ser Asp
	65	70	75
Asn Phe Ala	Asn Thr Arg Leu Gln	Ser Val Arg Glu Gly	Cys Arg Thr
	85	90	95
Arg Ser Gln	Cys Arg His Ser Gly	Pro Leu Arg Val Ala	Met Lys Phe
	100	105	110
Pro Ala Arg	Ser Thr Arg Gly Ala	Thr Asn Lys Lys Ala	Glu Ser Arg
	115	120	125
Gln Pro Ser	Glu Asn Ser Val Thr	Asp Ser Asn Ser Asp	Ser Glu Asp
	130	135	140
Glu Ser Gly	Met Asn Phe Leu Glu	Lys Arg Ala Leu Asn	Ile Lys Gln
	145	150	155
Asn Lys Ala	Met Leu Ala Lys Leu	Met Ser Glu Leu Glu	Ser Phe Pro
	165	170	175
Gly Ser Phe	Arg Gly Arg His Pro	Leu Pro Gly Ser Asp	Ser Gln Ser
	180	185	190
Arg Arg Pro	Arg Arg Arg Thr Phe	Pro Gly Val Ala Ser	Arg Arg Asn
	195	200	205
Pro Glu Arg	Arg Ala Arg Pro Leu	Thr Arg Ser Arg Ser	Arg Ile Leu
	210	215	220
Gly Ser Leu	Asp Ala Leu Pro Met	Glu Glu Glu Glu Glu	Asp Lys
	225	230	235
Tyr Met Leu	Val Arg Lys Arg Lys	Thr Val Asp Gly Tyr	Met Asn Glu
	245	250	255
Asp Asp Leu	Pro Arg Ser Arg Arg	Ser Arg Ser Ser Val	Thr Leu Pro
	260	265	270
His Ile Ile	Arg Pro Val Glu Glu	Ile Thr Glu Glu Glu	Leu Glu Asn

1179

275	280	285
Val Cys Ser Asn Ser Arg Glu Lys Ile Tyr Asn Arg Ser Leu Gly Ser		
290	295	300
Thr Cys His Gln Cys Arg Gln Lys Thr Ile Asp Thr Lys Thr Asn Cys		
305	310	315 320
Arg Asn Pro Asp Cys Trp Gly Val Arg Gly Gln Phe Cys Gly Pro Cys		
325	330	335
Leu Arg Asn Arg Tyr Gly Glu Glu Val Arg Asp Ala Leu Leu Asp Pro		
340	345	350
Asn Trp His Cys Pro Pro Cys Arg Gly Ile Cys Asn Cys Ser Phe Cys		
355	360	365
Arg Gln Arg Asp Gly Arg Cys Ala Thr Gly Val Leu Val Tyr Leu Ala		
370	375	380
Lys Tyr His Gly Phe Gly Asn Val His Ala Tyr Leu Lys Ser Leu Lys		
385	390	395 400
Gln Glu Phe Glu Met Gln Ala		
405		

&lt;210&gt; 1166

&lt;211&gt; 240

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (197)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (201)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (202)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (219)

1180

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1166

Pro Asp Gly Arg Pro Thr Gly Asp Ala Phe Val Leu Phe Ala Cys Glu  
 1 5 10 15

Glu Tyr Ala Gln Asn Ala Leu Arg Lys His Lys Asp Leu Leu Gly Lys  
 20 25 30

Arg Tyr Ile Glu Leu Phe Arg Ser Thr Ala Ala Glu Val Gln Gln Val  
 35 40 45

Leu Asn Arg Phe Ser Ser Ala Pro Leu Ile Pro Leu Pro Thr Pro Pro  
 50 55 60

Ile Ile Pro Val Leu Pro Gln Gln Phe Val Pro Pro Thr Asn Val Arg  
 65 70 75 80

Asp Cys Ile Arg Leu Arg Gly Leu Pro Tyr Ala Ala Thr Ile Glu Asp  
 85 90 95

Ile Leu Asp Phe Leu Gly Glu Phe Ala Thr Asp Ile Arg Thr His Gly  
 100 105 110

Val His Met Val Leu Asn His Gln Gly Arg Pro Ser Gly Asp Ala Phe  
 115 120 125

Ile Gln Met Lys Ser Ala Asp Arg Ala Phe Met Ala Ala Gln Lys Cys  
 130 135 140

His Lys Lys Asn Met Lys Asp Arg Tyr Val Glu Val Phe Gln Cys Ser  
 145 150 155 160

Ala Glu Glu Met Asn Phe Val Leu Met Gly Gly Thr Leu Asn Arg Asn  
 165 170 175

Gly Leu Ser Pro Pro Pro Cys Leu Ser Pro Pro Ser Tyr Thr Phe Pro  
 180 185 190

Ala Pro Ala Ala Xaa Ile Pro Thr Xaa Xaa Ala Ile Tyr Gln Pro Ser  
 195 200 205

Val Ile Leu Asn Pro Arg Ala Leu Gln Pro Xaa Thr Ala Tyr Tyr Pro  
 210 215 220

Ala Gly Thr Gln Leu Phe Met Asn Tyr Thr Ala Tyr Tyr Pro Ser Val  
 225 230 235 240

1181

&lt;210&gt; 1167

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1167

Gly Gly Tyr Ser Val Asp Ser Pro Thr Leu Thr Arg Phe Phe Thr Phe  
1 5 10 15

His Phe Ile Leu Pro Phe Ile Ile Ala Ala Leu Ala Ala Leu His Leu  
20 25 30

Leu Phe Leu His Glu Thr Gly Ser Asn Asn Pro Leu Gly Ile Thr Ser  
35 40 45

His Ser Asp Lys Ile Thr Phe His Pro Tyr Tyr Thr Ile Lys Asp Ala  
50 55 60

Leu Gly Leu Leu Leu Phe Leu Leu Ser Leu Met Thr Leu Thr Leu Phe  
65 70 75 80

Ser Pro Asp Leu Leu Gly Asp Pro Asp Asn Tyr Thr Leu Ala Asn Pro  
85 90 95

Leu Asn Thr Pro Pro His Ile Lys Pro Glu  
100 105

&lt;210&gt; 1168

&lt;211&gt; 210

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1168

Gln His Val Gln Arg Glu Trp Ser Gly His Gly Glu Asp Arg Gly Asp  
1 5 10 15

Gly Glu Asp Ala Glu Arg Gly Ser Cys Arg Glu Glu Pro Ala His Gly  
20 25 30

Val Glu Gly Ala Gly Asp Gly Ala Ala Ala Ala Gly Pro Gly Gly Gly  
35 40 45

1182

Ala Ala Glu Ala Xaa Gln Val Glu Arg Arg Leu Gln Ser Glu Ser Ala  
 50 55 60  
 Arg Arg Gln Gln Leu Val Glu Lys Glu Val Lys Met Arg Glu Lys Gln  
 65 70 75 80  
 Phe Ser Gln Ala Arg Pro Leu Thr Arg Tyr Leu Pro Ile Arg Lys Glu  
 85 90 95  
 Asp Phe Asp Leu Lys Thr His Ile Glu Ser Ser Gly His Gly Val Asp  
 100 105 110  
 Thr Cys Leu His Val Val Leu Ser Ser Lys Val Cys Arg Gly Tyr Leu  
 115 120 125  
 Val Lys Met Gly Gly Lys Ile Lys Ser Trp Lys Lys Arg Trp Phe Val  
 130 135 140  
 Phe Asp Arg Leu Lys Arg Thr Leu Ser Tyr Tyr Val Asp Lys His Glu  
 145 150 155 160  
 Thr Lys Leu Lys Gly Val Ile Tyr Phe Gln Ala Ile Glu Gly Ser Val  
 165 170 175  
 Leu Arg Pro Pro Ala Pro Val Gln Pro Arg Arg Gly Phe Ser Ala Ser  
 180 185 190  
 Thr Met Val Thr Glu Lys Pro Glu Pro Ser Pro His Leu Leu Arg Lys  
 195 200 205  
 Asp Pro  
 210

&lt;210&gt; 1169

&lt;211&gt; 181

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1169

Thr Ser Lys Met Arg Ser Leu Glu Thr Leu Gly Arg Pro Lys Pro Glu  
 1 5 10 15  
 Cys Glu Gly Tyr Asp Pro Asn Ala Leu Tyr Cys Ile Cys Arg Gln Pro  
 20 25 30  
 His Asn Asn Arg Phe Met Ile Cys Cys Asp Arg Cys Glu Glu Trp Phe  
 35 40 45  
 His Gly Asp Cys Val Gly Ile Ser Glu Ala Arg Gly Arg Leu Leu Glu

1183

50	55	60
Arg Asn Gly Glu Asp Tyr Ile Cys Pro Asn Cys Thr Ile Leu Gln Val		
65	70	75 80
Gln Asp Glu Thr His Ser Glu Thr Ala Asp Gln Gln Glu Ala Lys Trp		
85	90	95
Arg Pro Gly Asp Ala Asp Gly Thr Asp Cys Thr Ser Ile Gly Thr Ile		
100	105	110
Glu Gln Lys Ser Ser Glu Asp Gln Gly Ile Lys Gly Arg Ile Glu Lys		
115	120	125
Ala Ala Asn Pro Ser Gly Lys Lys Lys Leu Lys Ile Phe Gln Pro Val		
130	135	140
Ile Glu Ala Pro Gly Ala Ser Lys Cys Ile Gly Pro Gly Cys Cys His		
145	150	155 160
Val Ala His Pro Thr Arg Cys Thr Ala Val Met Thr Val Ser Ser Asn		
165	170	175
Thr Pro Gln Arg Gln		
180		

&lt;210&gt; 1170

&lt;211&gt; 166

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1170

Ala Gln Xaa Leu Ser Ser Pro Val Arg Gly Ile Ser Gly Glu Gln Ser
1 5 10 15

1184

Thr Xaa Gly Ser Phe Pro Leu Arg Tyr Val Gln Asp Gln Val Ala Ala  
                   20                                  25                                  30

Pro Phe Gln Leu Ser Asn His Thr Gly Arg Ile Lys Val Val Phe Thr  
                   35                                  40                                  45

Pro Ser Ile Cys Lys Val Thr Cys Thr Lys Gly Ser Cys Gln Asn Ser  
                   50                                  55                                  60

Cys Glu Lys Gly Asn Thr Thr Thr Leu Ile Ser Glu Asn Gly His Ala  
                   65                                  70                                  75                                  80

Ala Asp Thr Leu Thr Ala Thr Asn Phe Arg Val Val Ile Cys His Leu  
                                   85                                  90                                  95

Pro Cys Met Asn Gly Gly Gln Cys Ser Ser Arg Asp Lys Cys Gln Cys  
                   100                                  105                                  110

Pro Pro Asn Phe Thr Gly Lys Leu Cys Gln Ile Pro Val His Gly Ala  
                   115                                  120                                  125

Ser Val Xaa Lys Leu Tyr Gln His Ser Gln Gln Pro Gly Lys Ala Leu  
                   130                                  135                                  140

Gly Thr His Val Ile His Ser Thr His Thr Leu Pro Leu Thr Val Thr  
                   145                                  150                                  155                                  160

Ser Gln Gln Glu Ser Lys  
                                   165

&lt;210&gt; 1171

&lt;211&gt; 37

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1171

Asp Leu Ser Val Asn Phe Trp Glu Pro Asn Gly Phe Gly His Asp Phe  
                   1                                  5                                  10                                  15

Pro Ala His Tyr Ile Leu Thr Gln Asn Phe Phe Arg Met Ala Phe Thr  
                   20                                  25                                  30

Ser Thr Pro Glu Ile  
                                   35

&lt;210&gt; 1172

1185

<211> 169  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (22)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (70)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (115)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (116)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (163)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (167)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1172

Arg Gly Ala Met Val Ser Cys Arg Pro Gly Cys Cys Cys Pro Trp Thr  
 1 5 10 15

Pro Ala Val Leu Arg Xaa Ser Val Arg Gly Thr Phe Tyr Ser Pro Pro  
 20 25 30

Glu Ser Phe Ala Gly Ser Asp Asn Glu Ser Asp Glu Glu Val Ala Gly  
 35 40 45

Lys Lys Ser Phe Ser Ala Gln Glu Arg Glu Tyr Ile Arg Gln Gly Lys  
 50 55 60

Glu Ala Thr Ala Val Xaa Asp Gln Ile Leu Ala Gln Glu Glu Asn Trp  
 65 70 75 80

Lys Phe Glu Lys Asn Asn Glu Tyr Gly Asp Thr Val Tyr Thr Ile Glu



1186

	85		90		95
Val Pro Phe	His Gly Lys Thr Phe Ile Leu Lys Thr Phe Leu Pro Cys				
	100		105		110
Pro Ala Xaa Xaa Val Tyr Gln Glu Val Ile Leu Gln Pro Glu Arg Met					
	115		120		125
Val Leu Trp Asn Lys Thr Val Thr Ala Cys Gln Ile Leu Gln Arg Val					
	130		135		140
Glu Asp Asn Thr Leu Ile Ser Tyr Asp Val Ser Ala Arg Gly Cys Gly					
145		150		155	160
Arg Arg Xaa Leu Pro Gln Xaa Thr Ser					
	165				

&lt;210&gt; 1173

&lt;211&gt; 180

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (171)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1173

Glu Tyr Gly Asp Thr Val Tyr Thr Ile Glu Val Pro Phe His Gly Lys					
1		5		10	15
Thr Phe Ile Leu Lys Thr Phe Leu Pro Cys Pro Ala Glu Leu Val Tyr					
	20		25		30
Gln Glu Val Ile Leu Gln Pro Glu Arg Met Val Leu Trp Asn Lys Thr					
	35		40		45
Val Thr Ala Cys Gln Ile Leu Gln Arg Val Glu Asp Asn Thr Leu Ile					
50		55		60	
Ser Tyr Asp Val Ser Ala Gly Ala Ala Gly Gly Val Val Ser Pro Arg					
65		70		75	80
Asp Phe Val Asn Val Arg Arg Ile Glu Arg Arg Arg Asp Arg Tyr Leu					
	85		90		95
Ser Ser Gly Ile Ala Thr Ser His Ser Ala Lys Pro Pro Thr His Lys					
	100		105		110

1187

[illegible]

<210> 1174

<211> 436

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (14)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

**<222> (426)**

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1174

Arg His Gln Arg Arg Arg Ser Val Trp Arg Ser Arg Gly Xaa Cys Cys  
1 5 10 15

Arg Cys Cys Cys Thr Asn Arg Arg Ser Pro Gln Pro Cys Ala Ser Ser  
20 25 30

Leu Pro Pro Arg Thr Gly Glu Lys Gln Pro Arg Asn Phe Met Asn Lys  
35 40 45

His Gln Lys Pro Val Leu Thr Gly Gln Arg Phe Lys Thr Arg Lys Arg  
50 55 60

Asp Glu Lys Glu Lys Phe Glu Pro Thr Val Phe Arg Asp Thr Leu Val  
65 70 75 80

Gln Gly Leu Asn Glu Ala Gly Asp Asp Leu Glu Ala Val Ala Lys Phe  
85 90 95

1188

Leu Asp Ser Thr Gly Ser Arg Leu Asp Tyr Arg Arg Tyr Ala Asp Thr  
 100 105 110

Leu Phe Asp Ile Leu Val Ala Gly Ser Met Leu Ala Pro Gly Gly Thr  
 115 120 125

Arg Ile Asp Asp Gly Asp Lys Thr Lys Met Thr Asn His Cys Val Phe  
 130 135 140

Ser Ala Asn Glu Asp His Glu Thr Ile Arg Asn Tyr Ala Gln Val Phe  
 145 150 155 160

Asn Lys Leu Ile Arg Arg Tyr Lys Tyr Leu Glu Lys Ala Phe Glu Asp  
 165 170 175

Glu Met Lys Lys Leu Leu Leu Phe Leu Lys Ala Phe Ser Glu Thr Glu  
 180 185 190

Gln Thr Lys Leu Ala Met Leu Ser Gly Ile Leu Leu Gly Asn Gly Thr  
 195 200 205

Leu Pro Ala Thr Ile Leu Thr Ser Leu Phe Thr Asp Ser Leu Val Lys  
 210 215 220

Glu Gly Ile Ala Ala Ser Phe Ala Val Lys Leu Phe Lys Ala Trp Met  
 225 230 235 240

Ala Glu Lys Asp Ala Asn Ser Val Thr Ser Ser Leu Arg Lys Ala Asn  
 245 250 255

Leu Asp Lys Arg Leu Leu Glu Leu Phe Pro Val Asn Arg Gln Ser Val  
 260 265 270

Asp His Phe Ala Lys Tyr Phe Thr Asp Ala Gly Leu Lys Glu Leu Ser  
 275 280 285

Asp Phe Leu Arg Val Gln Gln Ser Leu Gly Thr Arg Lys Glu Leu Gln  
 290 295 300

Lys Glu Leu Gln Glu Arg Leu Ser Gln Glu Cys Pro Ile Lys Glu Val  
 305 310 315 320

Val Leu Tyr Val Lys Glu Glu Met Lys Arg Asn Asp Leu Pro Glu Thr  
 325 330 335

Ala Val Ile Gly Leu Leu Trp Thr Cys Ile Met Asn Ala Val Glu Trp  
 340 345 350

Asn Lys Lys Glu Glu Leu Val Ala Glu Gln Ala Leu Lys His Leu Lys  
 355 360 365

1189

Gln Tyr Ala Pro Leu Leu Ala Val Phe Ser Ser Gln Gly Gln Ser Glu  
 370 375 380  
 Leu Ile Leu Leu Gln Lys Val Gln Glu Tyr Cys Tyr Asp Asn Ile His  
 385 390 395 400  
 Phe Met Lys Ala Phe Gln Lys Ile Val Leu Pro Tyr Thr Ile Ser Val  
 405 410 415  
 Leu Leu Leu Arg Ser Glu His Gln Leu Xaa Ser Cys Arg Phe Gly Thr  
 420 425 430  
 Ser Gly Thr Ser  
 435

<210> 1175  
 <211> 366  
 <212> PRT  
 <213> Homo sapiens

<400> 1175  
 Thr Glu Pro Val Gly Tyr Thr Lys Ala Glu Glu Pro Ile Ala Met Arg  
 1 5 10 15  
 Ser Leu Gly Ala Leu Leu Leu Leu Leu Ser Ala Cys Leu Ala Val Ser  
 20 25 30  
 Ala Gly Pro Val Pro Thr Pro Pro Asp Asn Ile Gln Val Gln Glu Asn  
 35 40 45  
 Phe Asn Ile Ser Arg Ile Tyr Gly Lys Trp Tyr Asn Leu Ala Ile Gly  
 50 55 60  
 Ser Thr Cys Pro Trp Leu Lys Lys Ile Met Asp Arg Met Thr Val Ser  
 65 70 75 80  
 Thr Leu Val Leu Gly Glu Gly Ala Thr Glu Ala Glu Ile Ser Met Thr  
 85 90 95  
 Ser Thr Arg Trp Arg Lys Gly Val Cys Glu Glu Thr Ser Gly Ala Tyr  
 100 105 110  
 Glu Lys Thr Asp Thr Asp Gly Lys Phe Leu Tyr His Lys Ser Lys Trp  
 115 120 125  
 Asn Ile Thr Met Glu Ser Tyr Val Val His Thr Asn Tyr Asp Glu Tyr  
 130 135 140  
 Ala Ile Phe Leu Thr Lys Lys Phe Ser Arg His His Gly Pro Thr Ile

1190

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145              150              155              160
Thr Ala Lys Leu Tyr Gly Arg Ala Pro Gln Leu Arg Glu Thr Leu Leu
      165              170              175
Gln Asp Phe Arg Val Val Ala Gln Gly Val Gly Ile Pro Glu Asp Ser
      180              185              190
Ile Phe Thr Met Ala Asp Arg Gly Glu Cys Val Pro Gly Glu Gln Glu
      195              200              205
Pro Glu Pro Ile Leu Ile Pro Arg Val Arg Arg Ala Val Leu Pro Gln
      210              215              220
Glu Glu Glu Gly Ser Gly Gly Gly Gln Leu Val Thr Glu Val Thr Lys
225              230              235              240
Lys Glu Asp Ser Cys Gln Leu Gly Tyr Ser Ala Gly Pro Cys Met Gly
      245              250              255
Met Thr Ser Arg Tyr Phe Tyr Asn Gly Thr Ser Met Ala Cys Glu Thr
      260              265              270
Phe Gln Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Val Thr Glu
      275              280              285
Lys Glu Cys Leu Gln Thr Cys Arg Thr Val Ala Ala Cys Asn Leu Pro
      290              295              300
Ile Val Arg Gly Pro Cys Arg Ala Phe Ile Gln Leu Trp Ala Phe Asp
305              310              315              320
Ala Val Lys Gly Lys Cys Val Leu Phe Pro Tyr Gly Gly Cys Gln Gly
      325              330              335
Asn Gly Asn Lys Phe Tyr Ser Glu Lys Glu Cys Arg Glu Tyr Cys Gly
      340              345              350
Val Pro Gly Asp Gly Asp Glu Glu Leu Leu Arg Phe Ser Asn
      355              360              365

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&lt;210&gt; 1176

&lt;211&gt; 133

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (105)

1191

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (120)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (126)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1176

Met Pro Arg Ser Ser His His Pro Pro Arg Arg His Tyr His His His  
1 5 10 15

His Tyr His Gln Pro Pro Pro Ser Pro Cys Pro Ser Pro Pro Leu Thr  
20 25 30

Ser Pro Ser Pro Leu Ser Trp Ile Leu Trp Thr Cys Trp Pro Ser Thr  
35 40 45

Ala Ala Thr Arg Pro Gly Arg Arg Lys Trp Gly Cys Arg Leu Cys Pro  
50 55 60

Arg His Ser Ser Pro Leu Leu Leu Leu His Leu Asn Leu Leu Ala Trp  
65 70 75 80

Ala Pro Tyr Pro His Pro Ala Thr Thr Arg Gly Asp Arg Lys Gln Lys  
85 90 95

Lys Arg Asp Gln Asn Lys Ser Ala Xaa Leu Arg Tyr Arg Gln Arg Lys  
100 105 110

Gly Ala Gly Gly Val Glu Gly Xaa Gly Lys Gly Lys Leu Xaa Gly Gly  
115 120 125

Trp Glu Gly Lys Gly  
130

<210> 1177

<211> 583

<212> PRT

<213> Homo sapiens

<400> 1177

Thr Ala Gln Arg Pro Arg Ser Pro Glu Asn Cys Arg Pro Ser Thr Met  
1 5 10 15

1192

Trp Leu Arg Ala Phe Ile Leu Ala Thr Leu Ser Ala Ser Ala Ala Trp  
 20 25 30

Ala Gly His Pro Ser Ser Pro Pro Val Val Asp Thr Val His Gly Lys  
 35 40 45

Val Leu Gly Lys Phe Val Ser Leu Glu Gly Phe Ala Gln Pro Val Ala  
 50 55 60

Ile Phe Leu Gly Ile Pro Phe Ala Lys Pro Pro Leu Gly Pro Leu Arg  
 65 70 75 80

Phe Thr Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe Val Lys Asn Ala  
 85 90 95

Thr Ser Tyr Pro Pro Met Cys Thr Gln Asp Pro Lys Ala Gly Gln Leu  
 100 105 110

Leu Ser Glu Leu Phe Thr Asn Arg Lys Glu Asn Ile Pro Leu Lys Leu  
 115 120 125

Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro Ala Asp Leu Thr  
 130 135 140

Lys Lys Asn Arg Leu Pro Val Met Val Trp Ile His Gly Gly Gly Leu  
 145 150 155 160

Met Val Gly Ala Ala Ser Thr Tyr Asp Gly Leu Ala Leu Ala Ala His  
 165 170 175

Glu Asn Val Val Val Val Thr Ile Gln Tyr Arg Leu Gly Ile Trp Gly  
 180 185 190

Phe Phe Ser Thr Gly Asp Glu His Ser Arg Gly Asn Trp Gly His Leu  
 195 200 205

Asp Gln Val Ala Ala Leu Arg Trp Val Gln Asp Asn Ile Ala Ser Phe  
 210 215 220

Gly Gly Asn Pro Gly Ser Val Thr Ile Phe Gly Glu Ser Ala Gly Gly  
 225 230 235 240

Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala Lys Asn Leu Phe  
 245 250 255

His Arg Ala Ile Ser Glu Ser Gly Val Ala Leu Thr Ser Val Leu Val  
 260 265 270

Lys Lys Gly Asp Val Lys Pro Leu Ala Glu Gln Ile Ala Ile Thr Ala  
 275 280 285

1193

Gly	Cys	Lys	Thr	Thr	Thr	Ser	Ala	Val	Met	Val	His	Cys	Leu	Arg	Gln	290	295	300
Lys	Thr	Glu	Glu	Glu	Leu	Leu	Glu	Thr	Thr	Leu	Lys	Met	Lys	Phe	Leu	305	310	315
Ser	Leu	Asp	Leu	Gln	Gly	Asp	Pro	Arg	Glu	Ser	Gln	Pro	Leu	Leu	Gly	325	330	335
Thr	Val	Ile	Asp	Gly	Met	Leu	Leu	Leu	Lys	Thr	Pro	Glu	Glu	Leu	Gln	340	345	350
Ala	Glu	Arg	Asn	Phe	His	Thr	Val	Pro	Tyr	Met	Val	Gly	Ile	Asn	Lys	355	360	365
Gln	Glu	Phe	Gly	Trp	Leu	Ile	Pro	Met	Gln	Leu	Met	Ser	Tyr	Pro	Leu	370	375	380
Ser	Glu	Gly	Gln	Leu	Asp	Gln	Lys	Thr	Ala	Met	Ser	Leu	Leu	Trp	Lys	385	390	395
Ser	Tyr	Pro	Leu	Val	Cys	Ile	Ala	Lys	Glu	Leu	Ile	Pro	Glu	Ala	Thr	405	410	415
Glu	Lys	Tyr	Leu	Gly	Gly	Thr	Asp	Asp	Thr	Val	Lys	Lys	Lys	Asp	Leu	420	425	430
Phe	Leu	Asp	Leu	Ile	Ala	Asp	Val	Met	Phe	Gly	Val	Pro	Ser	Val	Ile	435	440	445
Val	Ala	Arg	Asn	His	Arg	Asp	Ala	Gly	Ala	Pro	Thr	Tyr	Met	Tyr	Glu	450	455	460
Phe	Gln	Tyr	Arg	Pro	Ser	Phe	Ser	Ser	Asp	Met	Lys	Pro	Lys	Thr	Val	465	470	475
Ile	Gly	Asp	His	Gly	Asp	Glu	Leu	Phe	Ser	Val	Phe	Gly	Ala	Pro	Phe	485	490	495
Leu	Lys	Glu	Gly	Ala	Ser	Glu	Glu	Glu	Ile	Arg	Leu	Ser	Lys	Met	Val	500	505	510
Met	Lys	Phe	Trp	Ala	Asn	Phe	Ala	Arg	Asn	Gly	Asn	Pro	Asn	Gly	Glu	515	520	525
Gly	Leu	Pro	His	Trp	Pro	Glu	Tyr	Asn	Gln	Lys	Glu	Gly	Tyr	Leu	Gln	530	535	540
Ile	Gly	Ala	Asn	Thr	Gln	Ala	Ala	Gln	Lys	Leu	Lys	Asp	Lys	Glu	Val	545	550	555



1194

Ala Phe Trp Thr Asn Leu Phe Ala Lys Lys Ala Val Glu Lys Pro Pro  
                   565                  570                  575

Gln Thr Glu His Ile Glu Leu  
                   580

&lt;210&gt; 1178

&lt;211&gt; 98

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1178

Pro Gly Arg Xaa Gln Leu Arg Ala Lys Phe Ser Cys Pro Pro Ala Asp  
   1                  5                  10                  15

Arg Val Asn Val Thr Val Arg Pro Gly Leu Ala Met Ala Leu Ser Gly  
                   20                  25                  30

Ser Thr Glu Pro Cys Ala Gln Leu Ser Ile Ser Ser Ile Gly Val Val  
                   35                  40                  45

Gly Thr Ala Glu Asp Asn Arg Ser His Ser Ala His Phe Phe Glu Phe  
                   50                  55                  60

Leu Thr Lys Glu Leu Ala Leu Gly Gln Asp Arg Ile Leu Ile Arg Phe  
                   65                  70                  75                  80

Phe Pro Leu Glu Ser Trp Gln Ile Gly Lys Ile Gly Thr Val Met Thr  
                   85                  90                  95

Phe Leu

&lt;210&gt; 1179

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1195

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (50)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1179

Phe	Arg	Pro	Ala	Val	Ser	Xaa	Gly	Ser	Leu	Cys	Leu	Pro	Ala	Arg	Thr
1				5					10					15	

Ala	His	Ser	Pro	Ala	Ser	Ser	Ala	Ala	Cys	Arg	Thr	Met	Ala	Gln	Gly
			20					25					30		

Gln	Arg	Lys	Phe	Gln	Ala	His	Lys	Pro	Ala	Lys	Ser	Lys	Thr	Ala	Ala
		35					40					45			

Ala	Xaa	Ser	Glu	Lys	Asn	Arg	Gly	Pro	Arg	Lys	Gly	Gly	Arg	Val	Ile
	50					55					60				

Ala	Pro	Xaa	Lys	Ala	Arg	Val	Val	Gln	Gln	Gln	Lys	Leu	Lys	Lys	Asn
65					70					75					80

Leu	Glu	Val	Gly	Ile	Arg	Lys	Lys	Ile	Glu	His	Asp	Val	Val	Met	Lys
				85					90					95	

Ala	Ser	Ser	Ser	Leu	Pro	Lys	Lys	Leu	Ala	Leu	Leu	Lys	Ala	Pro	Ala
			100					105					110		

Lys	Lys	Lys	Gly	Ala	Ala	Ala	Ala	Thr	Ser	Ser	Lys	Thr	Pro	Ser	
	115						120					125			

&lt;210&gt; 1180

&lt;211&gt; 94

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1180

Ser	Ser	Tyr	Arg	Ser	Lys	Ala	Tyr	Thr	His	Thr	Lys	Ile	Thr	Val	Pro
1				5					10					15	

Arg	Glu	Arg	Val	Cys	Val	Ser	Val	Arg	Val	Ser	Val	Cys	Ala	Arg	Ala
			20					25				30			

Arg	Ser	Trp	Pro	Asn	Val	Arg	Thr	Leu	His	Lys	Gly	Gly	Arg	Ser	Ser
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1196

35                      40                      45  
 Tyr Arg Leu Phe Asn Val Arg Glu Thr Ile Phe Leu Leu Phe Gln Leu  
     50                      55                      60  
 Tyr Gln Ile Leu Val Pro Gln His Arg Asn Asp Ser Glu Ser Gln Thr  
     65                      70                      75                      80  
 Lys Cys Ile Ile Cys Ser Ile Leu Ile Leu Leu Leu His Ser  
                     85                      90

&lt;210&gt; 1181

&lt;211&gt; 353

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1181

Gly Ser Leu Asp Leu Trp Arg Gly Ala Glu Leu Ser Pro Gly His Ser  
     1                      5                      10                      15  
 Thr Leu Phe Thr Leu Cys Ala Cys Ala Lys Gly Ala Met Ala Ala Ser  
                     20                      25                      30  
 Cys Val Leu Leu His Thr Gly Gln Lys Met Pro Leu Ile Gly Leu Gly  
                     35                      40                      45  
 Thr Trp Lys Ser Glu Pro Gly Gln Val Lys Ala Ala Val Lys Tyr Ala  
                     50                      55                      60  
 Leu Ser Val Gly Tyr Arg His Ile Asp Cys Ala Ala Ile Tyr Gly Asn  
     65                      70                      75                      80  
 Glu Pro Glu Ile Gly Glu Ala Leu Lys Glu Asp Val Gly Pro Gly Lys  
                     85                      90                      95  
 Ala Val Pro Arg Glu Glu Leu Phe Val Thr Ser Lys Leu Trp Asn Thr  
                     100                      105                      110  
 Lys His His Pro Glu Asp Val Glu Pro Ala Leu Arg Lys Thr Leu Ala  
                     115                      120                      125  
 Asp Leu Gln Leu Glu Tyr Leu Asp Leu Tyr Leu Met His Trp Pro Tyr  
                     130                      135                      140  
 Ala Phe Glu Arg Gly Asp Asn Pro Phe Pro Lys Asn Ala Asp Gly Thr  
     145                      150                      155                      160  
 Ile Cys Tyr Asp Ser Thr His Tyr Lys Glu Thr Trp Lys Ala Leu Glu  
                     165                      170                      175

1197

Ala Leu Val Ala Lys Gly Leu Val Gln Ala Leu Gly Leu Ser Asn Phe  
 180 185 190  
 Asn Ser Arg Gln Ile Asp Asp Ile Leu Ser Val Ala Ser Val Arg Pro  
 195 200 205  
 Ala Val Leu Gln Val Glu Cys His Pro Tyr Leu Ala Gln Asn Glu Leu  
 210 215 220  
 Ile Ala His Cys Gln Ala Arg Gly Leu Glu Val Thr Ala Tyr Ser Pro  
 225 230 235 240  
 Leu Gly Ser Ser Asp Arg Ala Trp Arg Asp Pro Asp Glu Pro Val Leu  
 245 250 255  
 Leu Glu Glu Pro Val Val Leu Ala Leu Ala Glu Lys Tyr Gly Arg Ser  
 260 265 270  
 Pro Ala Gln Ile Leu Leu Arg Trp Gln Val Gln Arg Lys Val Ile Cys  
 275 280 285  
 Ile Pro Lys Ser Ile Thr Pro Ser Arg Ile Leu Gln Asn Ile Lys Val  
 290 295 300  
 Phe Asp Phe Thr Phe Ser Pro Glu Glu Met Lys Gln Leu Asn Ala Leu  
 305 310 315 320  
 Asn Lys Asn Trp Arg Tyr Ile Val Pro Met Leu Thr Val Asp Gly Lys  
 325 330 335  
 Arg Val Pro Arg Asp Ala Gly His Pro Leu Tyr Pro Phe Asn Asp Pro  
 340 345 350

Tyr

&lt;210&gt; 1182

&lt;211&gt; 174

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1182

Ala Arg Asp Ser Leu Gln Leu Ser Met Ala Gln Thr Ser Ser Tyr Phe  
 1 5 10 15

Met Leu Ile Ser Cys Leu Met Phe Leu Ser Gln Ser Gln Gly Gln Glu  
 20 25 30

1198

Ala Gln Thr Glu Leu Pro Gln Ala Arg Ile Ser Cys Pro Glu Gly Thr  
35 40 45

Asn Ala Tyr Arg Ser Tyr Cys Tyr Tyr Phe Asn Glu Asp Arg Glu Thr  
50 55 60

Trp Val Asp Ala Asp Leu Tyr Cys Gln Asn Met Asn Ser Gly Asn Leu  
65 70 75 80

Val Ser Val Leu Thr Gln Ala Glu Gly Ala Phe Val Ala Ser Leu Ile  
85 90 95

Lys Glu Ser Gly Thr Asp Asp Phe Asn Val Trp Ile Gly Leu His Asp  
100 105 110

Pro Lys Lys Asn Arg Arg Trp His Trp Ser Ser Gly Ser Leu Val Ser  
115 120 125

Tyr Lys Ser Trp Gly Ile Gly Ala Pro Ser Ser Val Asn Pro Gly Tyr  
130 135 140

Cys Val Ser Leu Thr Ser Ser Thr Gly Phe Gln Lys Trp Lys Asp Val  
145 150 155 160

Pro Cys Glu Asp Lys Phe Ser Phe Val Cys Lys Phe Lys Asn  
165 170

&lt;210&gt; 1183

&lt;211&gt; 342

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (169)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (171)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (187)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1199

&lt;222&gt; (302)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (308)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1183

Ser Ile Phe Ser Tyr Ile Arg Leu Glu Leu Pro Ser Met Trp Leu Leu  
 1 5 10 15

Val Ser Val Ile Leu Ile Ser Arg Ile Ser Ser Val Gly Gly Glu Ala  
 20 25 30

Thr Phe Cys Asp Phe Pro Lys Ile Asn His Gly Ile Leu Tyr Asp Glu  
 35 40 45

Glu Lys Tyr Lys Pro Phe Ser Gln Val Pro Thr Gly Glu Val Phe Tyr  
 50 55 60

Tyr Ser Cys Glu Tyr Asn Phe Val Ser Pro Ser Lys Ser Phe Trp Thr  
 65 70 75 80

Arg Ile Thr Cys Thr Glu Glu Gly Trp Ser Pro Thr Pro Lys Cys Leu  
 85 90 95

Arg Leu Cys Phe Phe Pro Phe Val Glu Asn Gly His Ser Glu Ser Ser  
 100 105 110

Gly Gln Thr His Leu Glu Gly Asp Thr Val Gln Ile Ile Cys Asn Thr  
 115 120 125

Gly Tyr Arg Leu Gln Asn Asn Glu Asn Asn Ile Ser Cys Val Glu Arg  
 130 135 140

Gly Trp Ser Thr Pro Pro Lys Cys Arg Ser Thr Asp Thr Ser Cys Val  
 145 150 155 160

Asn Pro Pro Thr Val Gln Asn Ala Xaa Ile Xaa Ser Arg Gln Met Ser  
 165 170 175

Lys Tyr Pro Ser Gly Glu Arg Val Arg Tyr Xaa Cys Arg Ser Pro Tyr  
 180 185 190

Glu Met Phe Gly Asp Glu Glu Val Met Cys Leu Asn Gly Asn Trp Thr  
 195 200 205

Glu Pro Pro Gln Cys Lys Asp Ser Thr Gly Lys Cys Gly Pro Pro Pro  
 210 215 220

1200

Pro Ile Asp Asn Gly Asp Ile Thr Ser Phe Pro Leu Ser Val Tyr Ala  
 225 230 235 240

Pro Ala Ser Ser Val Glu Tyr Gln Cys Gln Asn Leu Tyr Gln Leu Glu  
 245 250 255

Gly Asn Lys Arg Ile Thr Cys Arg Asn Gly Gln Trp Ser Glu Pro Pro  
 260 265 270

Lys Cys Leu His Pro Cys Val Ile Ser Arg Glu Ile Met Glu Asn Tyr  
 275 280 285

Asn Ile Ala Leu Arg Trp Thr Ala Lys Gln Lys Leu Tyr Xaa Arg Thr  
 290 295 300

Gly Glu Ser Xaa Glu Phe Val Cys Lys Arg Gly Tyr Arg Leu Ser Ser  
 305 310 315 320

Arg Ser His Thr Leu Arg Thr Thr Cys Trp Asp Gly Lys Leu Glu Tyr  
 325 330 335

Pro Thr Cys Ala Lys Arg  
 340

<210> 1184

<211> 198

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (2)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (161)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1184

Pro Xaa Arg Pro Arg Gly Ala Ala Ala Ala Ala Ala Ala Gly Ala  
 1 5 10 15

Ala Met Pro Lys Gly Gly Arg Lys Gly Gly His Lys Gly Arg Ala Arg  
 20 25 30

Gln Tyr Thr Ser Pro Glu Glu Ile Asp Ala Gln Leu Gln Ala Glu Lys  
 35 40 45

1201

Gln Lys Ala Arg Glu Glu Glu Glu Gln Lys Glu Gly Gly Asp Gly Ala  
 50 55 60  
 Ala Gly Asp Pro Lys Lys Glu Lys Lys Ser Leu Asp Ser Asp Glu Ser  
 65 70 75 80  
 Glu Asp Glu Glu Asp Asp Tyr Gln Gln Lys Arg Lys Gly Val Glu Gly  
 85 90 95  
 Leu Ile Asp Ile Glu Asn Pro Asn Arg Val Ala Gln Thr Thr Lys Lys  
 100 105 110  
 Val Thr Gln Leu Asp Leu Asp Gly Pro Lys Glu Leu Ser Arg Arg Glu  
 115 120 125  
 Arg Glu Glu Ile Glu Lys Gln Lys Ala Lys Glu Arg Tyr Met Lys Met  
 130 135 140  
 His Leu Ala Gly Lys Thr Glu Gln Ala Lys Ala Asp Leu Ala Arg Leu  
 145 150 155 160  
 Xaa Ile Ile Arg Lys Gln Arg Glu Glu Ala Ala Arg Lys Lys Glu Glu  
 165 170 175  
 Glu Arg Lys Ala Lys Asp Asp Ala Thr Leu Ser Gly Lys Arg Met Gln  
 180 185 190  
 Ser Leu Ser Leu Asn Lys  
 195

&lt;210&gt; 1185

&lt;211&gt; 210

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1185

Ala His Ala Ser Ala His Ala Ser Gly Met Asp Leu Ser Leu Leu Trp  
 1 5 10 15  
 Val Leu Leu Pro Leu Val Thr Met Ala Trp Gly Gln Tyr Gly Asp Tyr  
 20 25 30  
 Gly Tyr Pro Tyr Gln Gln Tyr His Asp Tyr Ser Asp Asp Gly Trp Val  
 35 40 45  
 Asn Leu Asn Arg Gln Gly Phe Ser Tyr Gln Cys Pro Gln Gly Gln Val  
 50 55 60  
 Ile Val Ala Val Arg Ser Ile Phe Ser Lys Lys Glu Gly Ser Asp Arg



1202

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65              70              75              80
Gln Trp Asn Tyr Ala Cys Met Pro Thr Pro Gln Ser Leu Gly Glu Pro
      85              90              95
Thr Glu Cys Trp Trp Glu Glu Ile Asn Arg Ala Gly Met Glu Trp Tyr
      100             105             110
Gln Thr Cys Ser Asn Asn Gly Leu Val Ala Gly Phe Gln Ser Arg Tyr
      115             120             125
Phe Glu Ser Val Leu Asp Arg Glu Trp Gln Phe Tyr Cys Cys Arg Tyr
      130             135             140
Ser Lys Arg Cys Pro Tyr Ser Cys Trp Leu Thr Thr Glu Tyr Pro Gly
      145             150             155             160
His Tyr Gly Glu Glu Met Asp Met Ile Ser Tyr Asn Tyr Asp Tyr Tyr
      165             170             175
Ile Arg Gly Ala Thr Thr Thr Phe Ser Ala Val Glu Arg Asp Arg Gln
      180             185             190
Trp Lys Phe Ile Met Cys Arg Met Thr Glu Tyr Asp Cys Glu Phe Ala
      195             200             205
Asn Val
      210

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&lt;210&gt; 1186

&lt;211&gt; 141

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1186

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Arg Ala Ile Tyr Phe Leu Arg Val His Arg Leu Trp Ser Ser Ile Ser
  1              5              10              15
Leu Leu Phe Phe Pro Ser Ala Lys Met Ala Leu Glu Thr Val Pro Lys
      20              25              30
Asp Leu Arg His Leu Arg Ala Cys Leu Leu Cys Ser Leu Val Lys Thr
      35              40              45
Ile Asp Gln Phe Glu Tyr Asp Gly Cys Asp Asn Cys Asp Ala Tyr Leu
      50              55              60
Gln Met Lys Gly Asn Arg Glu Met Val Tyr Asp Cys Thr Ser Ser Ser
      65              70              75              80

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1203

Phe Asp Gly Ile Ile Ala Met Met Ser Pro Glu Asp Ser Trp Val Ser  
85 90 95

Lys Trp Gln Arg Val Ser Asn Phe Lys Pro Gly Val Tyr Ala Val Ser  
100 105 110

Val Thr Gly Arg Leu Pro Gln Gly Ile Val Arg Glu Leu Lys Ser Arg  
115 120 125

Gly Val Ala Tyr Lys Ser Arg Asp Thr Ala Ile Lys Thr  
130 135 140

<210> 1187

<211> 76

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (42)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

**<221> SITE**

<222> (66)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (74)

<223> xaa equals any of the naturally occurring L-amino acids

<400> 1187

Leu Leu Gly Ser Cys Leu Gln Glu Ala Met Thr Leu Asn Ser Glu Pro  
1 5 10 15

Tyr Ser Val Leu Thr Ser Gly Ser His Val Phe Leu Cys Gln Val Ile  
20 25 30

Lys Tyr Leu Val Leu Val Phe Cys Leu Xaa Pro Lys Leu Pro Leu Trp  
35 40 45

Val His Arg Arg Leu Gly Ser Ile Val Arg Met Ala Ile Arg Glu Tyr  
50 55 60

Lys Xaa Gly Phe Ser Lys Gly Leu Gly Xaa Asp Ser  
65 70 75

1204

&lt;210&gt; 1188

&lt;211&gt; 516

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1188

Ile Arg Ile Ala Ala Leu Asp Asp Phe Arg Thr Ser Leu Thr Met Ser  
 1 5 10 15

Ser Thr Arg Ser Gln Asn Pro His Gly Leu Lys Gln Ile Gly Leu Asp  
 20 25 30

Gln Ile Trp Asp Asp Leu Arg Ala Gly Ile Gln Gln Val Tyr Thr Arg  
 35 40 45

Gln Ser Met Ala Lys Ser Arg Tyr Met Glu Leu Tyr Thr His Val Tyr  
 50 55 60

Asn Tyr Cys Thr Ser Val His Gln Ser Asn Gln Ala Arg Gly Ala Gly  
 65 70 75 80

Val Pro Pro Ser Lys Ser Lys Lys Gly Gln Thr Pro Gly Gly Ala Gln  
 85 90 95

Phe Val Gly Leu Glu Leu Tyr Lys Arg Leu Lys Glu Phe Leu Lys Asn  
 100 105 110

Tyr Leu Thr Asn Leu Leu Lys Asp Gly Glu Asp Leu Met Asp Glu Ser  
 115 120 125

Val Leu Lys Phe Tyr Thr Gln Gln Trp Glu Asp Tyr Arg Phe Ser Ser  
 130 135 140

Lys Val Leu Asn Gly Ile Cys Ala Tyr Leu Asn Arg His Trp Val Arg  
 145 150 155 160

Arg Glu Cys Asp Glu Gly Arg Lys Gly Ile Tyr Glu Ile Tyr Ser Leu  
 165 170 175

Ala Leu Val Thr Trp Arg Asp Cys Leu Phe Arg Pro Leu Asn Lys Gln  
 180 185 190

Val Thr Asn Ala Val Leu Lys Leu Ile Glu Lys Glu Arg Asn Gly Glu  
 195 200 205

Thr Ile Asn Thr Arg Leu Ile Ser Gly Val Val Gln Ser Tyr Val Glu  
 210 215 220

Leu Gly Leu Asn Glu Asp Asp Ala Phe Ala Lys Gly Pro Thr Leu Thr

1205

225		230		235		240
Val Tyr Lys Glu Ser Phe Glu Ser Gln Phe Leu Ala Asp Thr Glu Arg						
	245		250		255	
Phe Tyr Thr Arg Glu Ser Thr Glu Phe Leu Gln Gln Asn Pro Val Thr						
	260		265		270	
Glu Tyr Met Lys Lys Ala Glu Ala Arg Leu Leu Glu Glu Gln Arg Arg						
	275		280		285	
Val Gln Val Tyr Leu His Glu Ser Thr Gln Asp Glu Leu Ala Arg Lys						
	290		295		300	
Cys Glu Gln Val Leu Ile Glu Lys His Leu Glu Ile Phe His Thr Glu						
305		310		315		320
Phe Gln Asn Leu Leu Asp Ala Asp Lys Asn Glu Asp Leu Gly Arg Met						
	325		330		335	
Tyr Asn Leu Val Ser Arg Ile Gln Asp Gly Leu Gly Glu Leu Lys Lys						
	340		345		350	
Leu Leu Glu Thr His Ile His Asn Gln Gly Leu Ala Ala Ile Glu Lys						
	355		360		365	
Cys Gly Glu Ala Ala Leu Asn Asp Pro Lys Met Tyr Val Gln Thr Val						
	370		375		380	
Leu Asp Val His Lys Lys Tyr Asn Ala Leu Val Met Ser Ala Phe Asn						
385		390		395		400
Asn Asp Ala Gly Phe Val Ala Ala Leu Asp Lys Ala Cys Gly Arg Phe						
	405		410		415	
Ile Asn Asn Asn Ala Val Thr Lys Met Ala Gln Ser Ser Ser Lys Ser						
	420		425		430	
Pro Glu Leu Leu Ala Arg Tyr Cys Asp Ser Leu Leu Lys Lys Ser Ser						
	435		440		445	
Lys Asn Pro Glu Glu Ala Glu Leu Glu Asp Thr Leu Asn Gln Val Met						
	450		455		460	
Val Val Phe Lys Tyr Ile Glu Asp Lys Asp Val Phe Gln Lys Phe Tyr						
465		470		475		480
Ala Lys Met Leu Ala Lys Arg Leu Val His Gln Asn Ser Ala Ser Asp						
	485		490		495	
Asp Ala Glu Ala Ser Met Ile Ser Lys Leu Lys Gln Ala Cys Gly Phe						

1206

500	505	510
Glu Tyr Thr Ser		
515		
<210> 1189		
<211> 287		
<212> PRT		
<213> Homo sapiens		
<220>		
<221> SITE		
<222> (20)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (24)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (27)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (55)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (172)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (254)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (271)		
<223> Xaa equals any of the naturally occurring L-amino acids		
<220>		
<221> SITE		
<222> (274)		
<223> Xaa equals any of the naturally occurring L-amino acids		

1207

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (275)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (280)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1189

Met	Ser	Tyr	Cys	Asp	Glu	Ser	Arg	Leu	Ser	Asn	Leu	Leu	Arg	Arg	Ile
1				5					10					15	

Thr	Arg	Glu	Xaa	Asp	Arg	Asp	Xaa	Arg	Leu	Xaa	Thr	Val	Lys	Gln	Leu
		20						25					30		

Lys	Glu	Phe	Ile	Gln	Gln	Pro	Glu	Asn	Lys	Leu	Val	Leu	Val	Lys	Gln
	35						40					45			

Leu	Asp	Ile	Leu	Ala	Ala	Xaa	His	Asp	Val	Leu	Asn	Glu	Ser	Ser	Lys
	50					55					60				

Leu	Leu	Gln	Glu	Leu	Arg	Gln	Glu	Gly	Ala	Cys	Cys	Leu	Gly	Leu	Leu
65				70						75					80

Cys	Ala	Ser	Leu	Ser	Tyr	Glu	Ala	Glu	Lys	Ile	Phe	Lys	Trp	Ile	Phe
			85						90					95	

Ser	Lys	Phe	Ser	Ser	Ser	Ala	Lys	Asp	Glu	Val	Lys	Leu	Leu	Tyr	Leu
		100						105					110		

Cys	Ala	Thr	Tyr	Lys	Ala	Leu	Glu	Thr	Val	Gly	Glu	Lys	Lys	Ala	Phe
		115					120					125			

Ser	Ser	Val	Met	Gln	Leu	Val	Met	Thr	Ser	Leu	Gln	Ser	Ile	Leu	Glu
	130					135					140				

Asn	Val	Asp	Thr	Pro	Glu	Leu	Leu	Cys	Lys	Cys	Val	Lys	Cys	Ile	Leu
145					150					155					160

Leu	Val	Ala	Arg	Cys	Tyr	Pro	His	Ile	Phe	Ser	Xaa	Asn	Phe	Arg	Asp
			165						170					175	

Thr	Val	Asp	Ile	Leu	Val	Gly	Trp	His	Arg	Asp	His	Thr	Gln	Lys	Pro
		180						185					190		

Ser	Leu	Thr	Gln	Gln	Val	Ser	Gly	Trp	Leu	Gln	Ser	Leu	Glu	Pro	Phe
		195					200					205			

1208

Trp Val Ala Asp Leu Ala Phe Pro Thr Thr Leu Leu Gly Gln Phe Leu  
 210 215 220  
 Glu Asp Met Glu Ala Tyr Ala Glu Asp Leu Ser His Val Ala Ser Gly  
 225 230 235 240  
 Glu Ser Val Asp Glu Asp Val Pro Pro Pro Ser Val Ser Xaa Pro Lys  
 245 250 255  
 Leu Ala Ala Leu Leu Arg Val Phe Ser Thr Val Val Arg Ser Xaa Gly  
 260 265 270  
 Glu Xaa Xaa Ser Pro Ile Arg Xaa Leu Gln Leu Leu Arg His Thr  
 275 280 285

&lt;210&gt; 1190

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1190

Arg Pro Pro Ser Arg Trp Ser Trp Trp Gln Gly Lys Pro Thr Gly Gly  
 1 5 10 15  
 Val Cys Val Ala Ala Ala Arg Ser Ser Pro Ser Val Thr Ala Pro Thr  
 20 25 30  
 Ser Ser Asn Ala Leu Ala Tyr Leu His Ser Ser Ser Arg Pro Lys Arg  
 35 40 45  
 Pro Ala Trp Trp His Ser Val Pro Ala Arg Pro Leu Arg Gly Pro Arg  
 50 55 60  
 Thr Ala Met Ala Pro Thr Gly Val Ser Ala Cys Arg Arg Gln Lys Trp  
 65 70 75 80  
 Ala Pro His Ser Glu Gly Ala Ala Ala Val Gln Pro Gln Val Ala Leu  
 85 90 95  
 Ala Pro Gly Leu  
 100

&lt;210&gt; 1191

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1209

&lt;400&gt; 1191

Asn Asp Val Ile His Gln Tyr Val Tyr Met Tyr Phe Tyr Ile Asp Leu  
 1 5 10 15

Glu Asn Thr Ala Lys Thr Phe Met Thr Ser Cys Ile Thr Ala Phe Val  
 20 25 30

Tyr Ile Phe Leu Thr Val Ile Ile Pro Thr Gly Thr Leu Thr Val Ala  
 35 40 45

Leu Leu Asn Val Gln Asn Leu Tyr Phe Arg Asn Asn Lys Lys Lys Asp  
 50 55 60

Thr Tyr Met Phe Pro Lys Gln Trp Cys Gly Glu Cys Val Arg Lys Thr  
 65 70 75 80

Asn Leu Ile Gly Ser Thr Asn Thr Lys Cys Ile Thr Asn Ala Pro Val  
 85 90 95

His Val Phe Val Leu Lys Arg Val Asn Glu Asp Leu Tyr Ile Ser Ile  
 100 105 110

Asn Asp Ile  
 115

&lt;210&gt; 1192

&lt;211&gt; 415

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1192

Arg Ile Pro Pro Glu Ser Leu Ala Arg Glu Xaa Arg Xaa Thr Lys Ser  
 1 5 10 15

Phe Ser Asn Pro Arg Arg Pro Asp Arg Gly Thr Trp Ser Leu Ser Glu  
 20 25 30

Lys Phe Asn Leu Arg Asp Lys Met Gln Trp Thr Ser Leu Leu Leu Leu  
 35 40 45



1210

Ala	Gly	Leu	Phe	Ser	Leu	Ser	Gln	Ala	Gln	Tyr	Glu	Asp	Asp	Pro	His	50	55	60	
Trp	Trp	Phe	His	Tyr	Leu	Arg	Ser	Gln	Gln	Ser	Thr	Tyr	Tyr	Asp	Pro	65	70	75	80
Tyr	Asp	Pro	Tyr	Pro	Tyr	Glu	Thr	Tyr	Glu	Pro	Tyr	Pro	Tyr	Gly	Val	85	90	95	
Asp	Glu	Gly	Pro	Ala	Tyr	Thr	Tyr	Gly	Ser	Pro	Ser	Pro	Pro	Asp	Pro	100	105	110	
Arg	Asp	Cys	Pro	Gln	Glu	Cys	Asp	Cys	Pro	Pro	Asn	Phe	Pro	Thr	Ala	115	120	125	
Met	Tyr	Cys	Asp	Asn	Arg	Asn	Leu	Lys	Tyr	Leu	Pro	Phe	Val	Pro	Ser	130	135	140	
Arg	Met	Lys	Tyr	Val	Tyr	Phe	Gln	Asn	Asn	Gln	Ile	Thr	Ser	Ile	Gln	145	150	155	160
Glu	Gly	Val	Phe	Asp	Asn	Ala	Thr	Gly	Leu	Leu	Trp	Ile	Ala	Leu	His	165	170	175	
Gly	Asn	Gln	Ile	Thr	Ser	Asp	Lys	Val	Gly	Arg	Lys	Val	Phe	Ser	Lys	180	185	190	
Leu	Arg	His	Leu	Glu	Arg	Leu	Tyr	Leu	Asp	His	Asn	Asn	Leu	Thr	Arg	195	200	205	
Met	Pro	Gly	Pro	Leu	Pro	Arg	Ser	Leu	Arg	Glu	Leu	His	Leu	Asp	His	210	215	220	
Asn	Gln	Ile	Ser	Arg	Val	Pro	Asn	Asn	Ala	Leu	Glu	Gly	Leu	Glu	Asn	225	230	235	240
Leu	Thr	Ala	Leu	Tyr	Leu	Gln	His	Asn	Glu	Ile	Gln	Glu	Val	Gly	Ser	245	250	255	
Ser	Met	Arg	Gly	Leu	Arg	Ser	Leu	Ile	Leu	Leu	Asp	Leu	Ser	Tyr	Asn	260	265	270	
His	Leu	Arg	Lys	Val	Pro	Asp	Gly	Leu	Pro	Ser	Ala	Leu	Glu	Gln	Leu	275	280	285	
Tyr	Met	Glu	His	Asn	Asn	Val	Tyr	Thr	Val	Pro	Asp	Ser	Tyr	Phe	Arg	290	295	300	
Gly	Ala	Pro	Lys	Leu	Leu	Tyr	Val	Arg	Leu	Ser	His	Asn	Ser	Leu	Thr	305	310	315	320

1211

Asn Asn Gly Leu Ala Ser Asn Thr Phe Asn Ser Ser Ser Leu Leu Glu  
                   325                                  330                                  335

Leu Asp Leu Ser Tyr Asn Gln Leu Gln Lys Ile Pro Pro Val Asn Thr  
                   340                                  345                                  350

Asn Leu Glu Asn Leu Tyr Leu Gln Gly Asn Arg Ile Asn Glu Phe Ser  
                   355                                  360                                  365

Ile Ser Ser Phe Cys Thr Val Val Asp Val Val Asn Phe Ser Lys Leu  
                   370                                  375                                  380

Gln Val Leu Arg Leu Asp Gly Asn Glu Ile Lys Arg Ser Ala Met Pro  
                   385                                  390                                  395                                  400

Ala Asp Ala Pro Leu Cys Leu Arg Leu Ala Ser Leu Ile Glu Ile  
                   405                                  410                                  415

&lt;210&gt; 1193

&lt;211&gt; 620

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (375)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (501)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (532)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (546)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1193

Ser Ala Val Thr Ala Phe Ser Glu Gly Ser Val Ile Ala Tyr Tyr Trp  
       1                  5                                  10                                  15

Ser Glu Phe Ser Ile Pro Gln His Leu Val Glu Glu Ala Glu Arg Val

1212

	20		25		30	
Met	Ala	Glu	Glu	Arg	Val	Val
	35		40		45	
Lys	Ser	Phe	Val	Val	Thr	Ser
	50		55		60	
Thr	Val	Gln	Arg	Thr	Gln	Asp
	65		70		75	
Arg	Gly	Val	Glu	Leu	Met	Arg
			85			90
Pro	Tyr	Pro	Ala	His	Ala	Arg
			100			105
Asp	Ser	Val	Leu	Ser	Leu	Thr
			115			120
Asp	Glu	Arg	Gly	Ser	Asp	Leu
			130			135
Met	Glu	Pro	His	Ala	Leu	Val
					150	
Tyr	Asn	Leu	Thr	Phe	His	Ser
					165	
Ile	Thr	Asn	Thr	Glu	Arg	Arg
					180	
Gln	Leu	Pro	Arg	Met	Ser	Ser
					195	
Gly	Thr	Phe	Asn	Ser	Pro	Tyr
					210	
Asp	Cys	Thr	Trp	Asn	Ile	Glu
					225	
Arg	Phe	Lys	Phe	Phe	Tyr	Leu
					245	
Cys	Pro	Lys	Asp	Tyr	Val	Glu
					260	
Arg	Ser	Gln	Phe	Val	Val	Thr
					275	
Phe	His	Ser	Asp	Gln	Ser	Tyr
					280	

1213

290	295	300
Leu Ser Tyr Asp Ser Ser Asp Pro Cys Pro Gly Gln Phe Thr Cys Arg		
305	310	315 320
Thr Gly Arg Cys Ile Arg Lys Glu Leu Arg Cys Asp Gly Trp Ala Asp		
	325	330 335
Cys Thr Asp His Ser Asp Glu Leu Asn Cys Ser Cys Asp Ala Gly His		
	340	345 350
Gln Phe Thr Cys Lys Asn Lys Phe Cys Lys Pro Leu Phe Trp Val Cys		
	355	360 365
Asp Ser Val Asn Asp Cys Xaa Asp Asn Ser Asp Glu Gln Gly Cys Ser		
	370	375 380
Cys Pro Ala Gln Thr Phe Arg Cys Ser Asn Gly Lys Cys Leu Ser Lys		
385	390	395 400
Ser Gln Gln Cys Asn Gly Lys Asp Asp Cys Gly Asp Gly Ser Asp Glu		
	405	410 415
Ala Ser Cys Pro Lys Val Asn Val Val Thr Cys Thr Lys His Thr Tyr		
	420	425 430
Arg Cys Leu Asn Gly Leu Cys Leu Ser Lys Gly Asn Pro Glu Cys Asp		
	435	440 445
Gly Lys Glu Asp Cys Ser Asp Gly Ser Asp Glu Lys Asp Cys Asp Cys		
	450	455 460
Gly Leu Arg Ser Phe Thr Arg Gln Ala Arg Val Val Gly Gly Thr Asp		
465	470	475 480
Ala Asp Glu Gly Glu Trp Pro Trp Gln Val Ser Leu His Ala Leu Gly		
	485	490 495
Gln Gly Thr Ser Xaa Gly Ala Ser Leu Ile Ser Pro Asn Trp Leu Val		
	500	505 510
Ser Ala Ala His Cys Tyr Ile Asp Asp Arg Gly Phe Arg Tyr Ser Asp		
	515	520 525
Pro Thr Gln Xaa Thr Ala Phe Leu Gly Leu His Asp Gln Ser Gln Arg		
	530	535 540
Ser Xaa Leu Gly Cys Arg Ser Ala Gly Ser Ser Ala Ser Ser Pro Thr		
545	550	555 560
Pro Ser Ser Met Thr Ser Pro Ser Thr Met Thr Ser Arg Cys Trp Ser		

1214

565 570 575  
Trp Arg Asn Arg Gln Ser Thr Ala Pro Trp Cys Gly Pro Ser Ala Cys  
580 585 590  
Arg Thr Pro Pro Met Ser Ser Leu Pro Ala Arg Pro Ser Gly Ser Arg  
595 600 605  
Ala Gly Asp Thr Pro Ser Met Glu Ala Leu Ala Arg  
610 615 620

<210> 1194  
<211> 51  
<212> PRT  
<213> Homo sapiens

<400> 1194  
Arg Thr Leu Cys His Leu Thr Thr Leu Asp Glu Leu Ser Cys Gln Arg  
1 5 10 15  
Glu Asn Leu Met Phe Lys Glu His Phe Pro Leu Ala Asp Val Thr Ala  
20 25 30  
Gly Phe Val Phe His Met Cys Phe Ser Tyr Thr His Leu Asn Ala Phe  
35 40 45  
Lys His Leu  
50

<210> 1195  
<211> 269  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (245)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (246)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (257)

1215

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (266)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1195

Pro Ala Glu Asp Ala Ala Ser Leu Thr Trp Gly Val Ala Ile Arg Ala  
 1 5 10 15

Gly Arg Ser Trp Phe Ser Gly Pro Ala Ala Pro Ala Ala Ala Met Ser  
 20 25 30

Phe Phe Pro Glu Leu Tyr Phe Asn Val Asp Asn Gly Tyr Leu Glu Gly  
 35 40 45

Leu Val Arg Gly Leu Lys Ala Gly Val Leu Ser Gln Ala Asp Tyr Leu  
 50 55 60

Asn Leu Val Gln Cys Glu Thr Leu Glu Asp Leu Lys Leu His Leu Gln  
 65 70 75 80

Ser Thr Asp Tyr Gly Asn Phe Leu Ala Asn Glu Ala Ser Pro Leu Thr  
 85 90 95

Val Ser Val Ile Asp Asp Arg Leu Lys Glu Lys Met Val Val Glu Phe  
 100 105 110

Arg His Met Arg Asn His Ala Tyr Glu Pro Leu Ala Ser Phe Leu Asp  
 115 120 125

Phe Ile Thr Tyr Ser Tyr Met Ile Asp Asn Val Ile Leu Leu Ile Thr  
 130 135 140

Gly Thr Leu His Gln Arg Ser Ile Ala Glu Leu Val Pro Lys Cys His  
 145 150 155 160

Pro Leu Gly Ser Phe Glu Gln Met Glu Ala Val Asn Ile Ala Gln Thr  
 165 170 175

Pro Ala Glu Leu Tyr Asn Ala Ile Leu Val Asp Thr Pro Leu Ala Ala  
 180 185 190

Phe Phe Gln Asp Cys Ile Ser Glu Gln Asp Leu Asp Glu Met Asn Ile  
 195 200 205

Glu Ile Ile Arg Asn Thr Leu Tyr Lys Ala Tyr Leu Glu Ser Phe Tyr  
 210 215 220

Lys Phe Cys Thr Leu Leu Gly Gly Thr Thr Ala Asp Ala Met Cys Pro

1216

225                      230                      235                      240  
 Ile Leu Glu Phe Xaa Xaa Gln Thr Val Pro Ser Ser Phe His Thr Val  
                                  245                      250                      255  
 Xaa Gly Ser Thr Leu Arg Ala Trp Arg Xaa Gly Ser Gly  
                                  260                      265

&lt;210&gt; 1196

&lt;211&gt; 301

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1196

Arg His Glu Pro Ala Pro Arg Glu Ala Pro Gly Ser Arg Ala Ser Ala  
   1                                  5                                  10                                  15  
 Phe Leu Leu Pro Ser Phe Leu Pro Gly Pro Arg Leu Val Pro Ala Gly  
                                   20                                  25                                  30  
 His Pro Thr Ala Thr Met Phe Val Pro Cys Gly Glu Ser Ala Pro Asp  
                                   35                                  40                                  45  
 Leu Ala Gly Phe Thr Leu Leu Met Pro Ala Val Ser Val Gly Asn Val  
   50                                  55                                  60  
 Gly Gln Leu Ala Met Asp Leu Ile Ile Ser Thr Leu Asn Met Ser Lys  
   65                                  70                                  75                                  80  
 Ile Gly Tyr Phe Tyr Thr Asp Cys Leu Val Pro Met Val Gly Asn Asn  
                                   85                                  90                                  95  
 Pro Tyr Ala Thr Thr Glu Gly Asn Ser Thr Glu Leu Ser Ile Asn Ala  
                                   100                                  105                                  110  
 Glu Val Tyr Ser Leu Pro Ser Arg Lys Leu Val Ala Leu Gln Leu Arg  
                                   115                                  120                                  125  
 Ser Ile Phe Ile Lys Tyr Lys Ser Lys Pro Phe Cys Glu Lys Leu Leu  
   130                                  135                                  140  
 Ser Trp Val Lys Ser Ser Gly Cys Ala Arg Val Ile Val Leu Ser Ser  
   145                                  150                                  155                                  160  
 Ser His Ser Tyr Gln Arg Asn Asp Leu Gln Leu Arg Ser Thr Pro Phe  
                                   165                                  170                                  175  
 Arg Tyr Leu Leu Thr Pro Ser Met Gln Lys Ser Val Gln Asn Lys Ile  
                                   180                                  185                                  190

1217

Lys Ser Leu Asn Trp Glu Glu Met Glu Lys Ser Arg Cys Ile Pro Glu  
 195 200 205  
 Ile Asp Asp Ser Glu Phe Cys Ile Arg Ile Pro Gly Gly Gly Ile Thr  
 210 215 220  
 Lys Thr Leu Tyr Asp Glu Ser Cys Ser Lys Glu Ile Gln Met Ala Val  
 225 230 235 240  
 Leu Leu Lys Phe Val Ser Glu Gly Asp Asn Ile Pro Asp Ala Leu Gly  
 245 250 255  
 Leu Val Glu Tyr Leu Asn Glu Trp Leu Gln Ile Leu Lys Pro Leu Ser  
 260 265 270  
 Asp Asp Pro Thr Val Ser Ala Ser Arg Trp Lys Ile Pro Ser Ser Trp  
 275 280 285  
 Arg Leu Leu Phe Gly Ser Gly Leu Pro Pro Ala Leu Phe  
 290 295 300

&lt;210&gt; 1197

&lt;211&gt; 246

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (65)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (230)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1197

Gly Thr Arg Asp Leu Leu Ala Ala Ala Ala Thr Gly Lys Leu  
 1 5 10 15

Lys Ser Phe Ala Arg Lys Phe Ile Asn Leu Asn Glu Phe Thr Thr Tyr  
 20 25 30



1218

Gly Ser Glu Glu Ser Thr Lys Pro Ala Ser Val Arg Ala Leu Leu Phe  
                   35                                  40                                  45  
 Xaa Ile Ser Phe Leu Met Leu Cys His Val Ala Gln Thr Tyr Gly Ser  
                   50                                  55                                  60  
 Xaa Val Ile Leu Ser Glu Ser Arg Thr Gly Ala Glu Val Pro Phe Phe  
                   65                                  70                                  75                                  80  
 Glu Thr Trp Met Gln Thr Cys Met Pro Glu Glu Gly Lys Ile Leu Asn  
                                   85                                  90                                  95  
 Pro Asp His Pro Cys Phe Arg Pro Asp Ser Thr Lys Val Glu Ser Leu  
                                   100                                  105                                  110  
 Val Ala Leu Leu Asn Asn Ser Ser Glu Met Lys Leu Val Gln Met Lys  
                   115                                  120                                  125  
 Trp His Glu Ala Cys Leu Ser Ile Ser Ala Ala Ile Leu Glu Ile Leu  
                   130                                  135                                  140  
 Asn Ala Trp Glu Asn Gly Val Leu Ala Phe Glu Ser Ile Gln Lys Ile  
                   145                                  150                                  155                                  160  
 Thr Asp Asn Ile Lys Gly Lys Val Cys Ser Leu Ala Val Cys Ala Val  
                                   165                                  170                                  175  
 Ala Trp Leu Val Ala His Val Arg Met Leu Gly Leu Asp Glu Arg Glu  
                   180                                  185                                  190  
 Lys Ser Leu Gln Met Ile Arg Gln Leu Ala Gly Pro Leu Phe Ser Glu  
                   195                                  200                                  205  
 Asn Thr Leu Gln Phe Tyr Asn Glu Arg Val Val Ile Met Asn Ser Ile  
                   210                                  215                                  220  
 Leu Gly Ala His Val Xaa Arg Arg Ala Ala Ala Asp Ser His Ala Gly  
                   225                                  230                                  235                                  240  
 Phe Lys Phe Pro Ser Asn  
                                   245

&lt;210&gt; 1198

&lt;211&gt; 465

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1219

&lt;222&gt; (203)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (460)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (461)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1198

Lys	Asn	Met	Glu	Thr	Glu	Gln	Pro	Glu	Glu	Thr	Phe	Pro	Asn	Thr	Glu
1				5				10						15	

Thr	Asn	Gly	Glu	Phe	Gly	Lys	Arg	Pro	Ala	Glu	Asp	Met	Glu	Glu	Glu
			20					25					30		

Gln	Ala	Phe	Lys	Arg	Ser	Arg	Asn	Thr	Asp	Glu	Met	Val	Glu	Leu	Arg
		35					40					45			

Ile	Leu	Leu	Gln	Ser	Lys	Asn	Ala	Gly	Ala	Val	Ile	Gly	Lys	Gly	Gly
50						55					60				

Lys	Asn	Ile	Lys	Ala	Leu	Arg	Thr	Asp	Tyr	Asn	Ala	Ser	Val	Ser	Val
65					70					75					80

Pro	Asp	Ser	Ser	Gly	Pro	Glu	Arg	Ile	Leu	Ser	Ile	Ser	Ala	Asp	Ile
				85					90					95	

Glu	Thr	Ile	Gly	Glu	Ile	Leu	Lys	Lys	Ile	Ile	Pro	Thr	Leu	Glu	Glu
			100					105					110		

Gly	Leu	Gln	Leu	Pro	Ser	Pro	Thr	Ala	Thr	Ser	Gln	Leu	Pro	Leu	Glu
		115					120					125			

Ser	Asp	Ala	Val	Glu	Cys	Leu	Asn	Tyr	Gln	His	Tyr	Lys	Gly	Ser	Asp
130						135					140				

Phe	Asp	Cys	Glu	Leu	Arg	Leu	Leu	Ile	His	Gln	Ser	Leu	Ala	Gly	Gly
145					150					155					160

Ile	Ile	Gly	Val	Lys	Gly	Ala	Lys	Ile	Lys	Glu	Leu	Arg	Glu	Asn	Thr
			165						170					175	

Gln	Thr	Thr	Ile	Lys	Leu	Phe	Gln	Glu	Cys	Cys	Pro	His	Ser	Thr	Asp
			180					185					190		

Arg	Val	Val	Leu	Ile	Gly	Gly	Lys	Pro	Asp	Xaa	Val	Val	Glu	Cys	Ile
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1220

195	200	205
Lys Ile Ile Leu Asp Leu Ile Ser Glu Ser Pro Ile Lys Gly Arg Ala		
210	215	220
Gln Pro Tyr Asp Pro Asn Phe Tyr Asp Glu Thr Tyr Asp Tyr Gly Gly		
225	230	235 240
Phe Thr Met Met Phe Asp Asp Arg Arg Gly Arg Pro Val Gly Phe Pro		
	245	250 255
Met Arg Gly Arg Gly Gly Phe Asp Arg Met Pro Pro Gly Arg Gly Gly		
	260	265 270
Arg Pro Met Pro Pro Ser Arg Arg Asp Tyr Asp Asp Met Ser Pro Arg		
	275	280 285
Arg Gly Pro Pro Pro Pro Pro Pro Gly Arg Gly Gly Arg Gly Gly Ser		
	290	295 300
Arg Ala Arg Asn Leu Pro Leu Pro Pro Pro Pro Pro Pro Arg Gly Gly		
305	310	315 320
Asp Leu Met Ala Tyr Asp Arg Arg Gly Arg Pro Gly Asp Arg Tyr Asp		
	325	330 335
Gly Met Val Gly Phe Ser Ala Asp Glu Thr Trp Asp Ser Ala Ile Asp		
	340	345 350
Thr Trp Ser Pro Ser Glu Trp Gln Met Ala Tyr Glu Pro Gln Gly Gly		
	355	360 365
Ser Gly Tyr Asp Tyr Ser Tyr Ala Gly Gly Arg Gly Ser Tyr Gly Asp		
370	375	380
Leu Gly Gly Pro Ile Ile Thr Thr Gln Val Thr Ile Pro Lys Asp Leu		
385	390	395 400
Ala Gly Ser Ile Ile Gly Lys Gly Gly Gln Arg Ile Lys Gln Ile Arg		
	405	410 415
His Glu Ser Gly Ala Ser Ile Lys Ile Asp Glu Pro Leu Glu Gly Ser		
	420	425 430
Glu Asp Arg Ile Ile Thr Ile Thr Gly Thr Gln Asp Gln Ile Gln Asn		
	435	440 445
Ala Gln Tyr Leu Leu Gln Asn Ser Val Ser Ser Xaa Xaa Leu Ala Leu		
450	455	460

Cys

1221

465

&lt;210&gt; 1199

&lt;211&gt; 446

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (87)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1199

Tyr	Pro	Ala	Ala	Cys	Xaa	Thr	Gly	Pro	Glu	Phe	Pro	Gly	Arg	Pro	Thr
1				5					10					15	

Arg	Pro	His	Glu	Met	Asp	Gln	Tyr	Trp	Gly	Ile	Gly	Ser	Leu	Ala	Ser
			20						25					30	

Gly	Ile	Asn	Leu	Phe	Thr	Asn	Ser	Phe	Glu	Gly	Pro	Val	Leu	Asp	His
		35					40					45			

Arg	Tyr	Tyr	Ala	Gly	Gly	Cys	Ser	Pro	His	Tyr	Ile	Leu	Asn	Thr	Arg
		50				55					60				

Phe	Arg	Lys	Pro	Tyr	Asn	Val	Glu	Ser	Tyr	Thr	Pro	Gln	Thr	Gln	Gly
65					70					75					80

Lys	Tyr	Glu	Phe	Ile	Leu	Xaa	Xaa	Tyr	Glu	Ser	Tyr	Ser	Asp	Phe	Glu
				85					90					95	

Arg	Asn	Val	Thr	Glu	Lys	Met	Ala	Ser	Lys	Ser	Gly	Phe	Ser	Phe	Gly
			100					105						110	

Phe	Lys	Ile	Pro	Gly	Ile	Phe	Glu	Leu	Gly	Ile	Ser	Ser	Gln	Ser	Asp
		115					120					125			

Arg	Gly	Lys	His	Tyr	Ile	Arg	Arg	Thr	Lys	Arg	Phe	Ser	His	Thr	Lys
		130					135					140			

1222

Ser Val Phe Leu His Ala Arg Ser Asp Leu Glu Val Ala His Tyr Lys  
 145 150 155 160  
 Leu Lys Pro Arg Ser Leu Met Leu His Tyr Glu Phe Leu Gln Arg Val  
 165 170 175  
 Lys Arg Leu Pro Leu Glu Tyr Ser Tyr Gly Glu Tyr Arg Asp Leu Phe  
 180 185 190  
 Arg Asp Phe Gly Thr His Tyr Ile Thr Glu Ala Val Leu Gly Gly Ile  
 195 200 205  
 Tyr Glu Tyr Thr Leu Val Met Asn Lys Glu Ala Met Glu Arg Gly Asp  
 210 215 220  
 Tyr Thr Leu Asn Asn Val His Ala Cys Ala Lys Asn Asp Phe Lys Ile  
 225 230 235 240  
 Gly Gly Ala Ile Glu Glu Val Tyr Val Ser Leu Gly Val Ser Val Gly  
 245 250 255  
 Lys Cys Arg Gly Ile Leu Asn Glu Ile Lys Asp Arg Asn Lys Arg Asp  
 260 265 270  
 Thr Met Val Glu Asp Leu Val Val Leu Val Arg Gly Gly Ala Ser Glu  
 275 280 285  
 His Ile Thr Thr Leu Ala Tyr Gln Glu Leu Pro Thr Ala Asp Leu Met  
 290 295 300  
 Gln Glu Trp Gly Asp Ala Val Gln Tyr Asn Pro Ala Ile Ile Lys Val  
 305 310 315 320  
 Lys Val Glu Pro Leu Tyr Glu Leu Val Thr Ala Thr Asp Phe Ala Tyr  
 325 330 335  
 Ser Ser Thr Val Arg Gln Asn Met Lys Gln Ala Leu Glu Glu Phe Gln  
 340 345 350  
 Lys Glu Val Ser Ser Cys His Cys Ala Pro Cys Gln Gly Asn Gly Val  
 355 360 365  
 Pro Val Leu Lys Gly Ser Arg Cys Asp Cys Ile Cys Pro Val Gly Ser  
 370 375 380  
 Gln Gly Leu Ala Cys Glu Val Ser Tyr Arg Lys Asn Thr Pro Ile Asp  
 385 390 395 400  
 Gly Lys Trp Asn Cys Trp Ser Asn Trp Ser Ser Cys Ser Gly Arg Arg  
 405 410 415

1223

Lys Thr Arg Gln Arg Gln Cys Asn Asn Pro Pro Pro Gln Asn Gly Gly  
 420 425 430

Ser Pro Cys Ser Gly Pro Ala Ser Glu Thr Leu Asp Cys Ser  
 435 440 445

&lt;210&gt; 1200

&lt;211&gt; 437

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1200

Leu Gly Ser Ser Asp Ser Tyr Ala Ser Pro Gly Arg Ala Ala Ala Pro  
 1 5 10 15

Pro Ala Ala Ala Gly Pro Gly Asp Thr Ser Ala Cys Tyr Lys Ser Ser  
 20 25 30

Gly Pro Arg Cys Leu Leu Pro Asp Leu Ala Pro Ser Ser Glu Pro Gly  
 35 40 45

Ala Cys Leu Gly Gly Leu Ser Val Phe Thr Met Glu Gln Leu Ser Ser  
 50 55 60

Ala Asn Thr Arg Phe Ala Leu Asp Leu Phe Leu Ala Leu Ser Glu Asn  
 65 70 75 80

Asn Pro Ala Gly Asn Ile Phe Ile Ser Pro Phe Ser Ile Ser Ser Ala  
 85 90 95

Met Ala Met Val Phe Leu Gly Thr Arg Gly Asn Thr Ala Ala Gln Leu  
 100 105 110

Ser Lys Thr Phe His Phe Asn Thr Val Glu Glu Val His Ser Arg Phe  
 115 120 125

Gln Ser Leu Asn Ala Asp Ile Asn Lys Arg Gly Ala Ser Tyr Ile Leu  
 130 135 140

Lys Leu Ala Asn Arg Leu Tyr Gly Glu Lys Thr Tyr Asn Phe Leu Pro  
 145 150 155 160

Glu Phe Leu Val Ser Thr Gln Lys Thr Tyr Gly Ala Asp Leu Ala Ser  
 165 170 175

Val Asp Phe Gln His Ala Ser Glu Asp Ala Arg Lys Thr Ile Asn Gln  
 180 185 190

1224

Trp Val Lys Gly Gln Thr Glu Gly Lys Ile Pro Glu Leu Leu Ala Ser  
 195 200 205  
 Gly Met Val Asp Asn Met Thr Lys Leu Val Leu Val Asn Ala Ile Tyr  
 210 215 220  
 Phe Lys Gly Asn Trp Lys Asp Lys Phe Met Lys Glu Ala Thr Thr Asn  
 225 230 235 240  
 Ala Pro Phe Arg Leu Asn Lys Lys Asp Arg Lys Thr Val Lys Met Met  
 245 250 255  
 Tyr Gln Lys Lys Lys Phe Ala Tyr Gly Tyr Ile Glu Asp Leu Lys Cys  
 260 265 270  
 Arg Val Leu Glu Leu Pro Tyr Gln Gly Glu Glu Leu Ser Met Val Ile  
 275 280 285  
 Leu Leu Pro Asp Asp Ile Glu Asp Glu Ser Thr Gly Leu Lys Lys Ile  
 290 295 300  
 Glu Glu Gln Leu Thr Leu Glu Lys Leu His Glu Trp Thr Lys Pro Glu  
 305 310 315 320  
 Asn Leu Asp Phe Ile Glu Val Asn Val Ser Leu Pro Arg Phe Lys Leu  
 325 330 335  
 Glu Glu Ser Tyr Thr Leu Asn Ser Asp Leu Ala Arg Leu Gly Val Gln  
 340 345 350  
 Asp Leu Phe Asn Ser Ser Lys Ala Asp Leu Ser Gly Met Ser Gly Ala  
 355 360 365  
 Arg Asp Ile Phe Ile Ser Lys Ile Val His Lys Ser Phe Val Glu Val  
 370 375 380  
 Asn Glu Glu Gly Thr Glu Ala Ala Ala Ala Thr Ala Gly Ile Ala Thr  
 385 390 395 400  
 Phe Cys Met Leu Met Pro Glu Glu Asn Phe Thr Ala Asp His Pro Phe  
 405 410 415  
 Leu Phe Phe Ile Arg His Asn Ser Ser Gly Ser Ile Leu Phe Leu Gly  
 420 425 430  
 Arg Phe Ser Ser Pro  
 435

&lt;210&gt; 1201

1225

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1201

Gln Leu Gly Pro Val Val Gly Gly Trp Tyr Lys Val Leu Asp Arg Phe  
 1 5 10 15

Ile Pro Gly Thr Thr Lys Val Asp Ala Leu Lys Lys Met Leu Leu Asp  
 20 25 30

Gln Gly Gly Phe Ala Pro Cys Phe Leu Gly Cys Phe Leu Pro Leu Val  
 35 40 45

Gly Ala Leu Asn Gly Leu Ser Ala Gln Asp Asn Trp Pro Asn Tyr Ser  
 50 55 60

Gly Ile Ile Leu Met Pro Leu Ser Pro Thr Thr Ile Tyr Gly Leu Leu  
 65 70 75 80

Cys Xaa

&lt;210&gt; 1202

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1202

Ile Ser Arg Ser Ser Ala Arg Arg Gln Pro Phe Arg His Gly Arg Leu  
 1 5 10 15

Trp Arg Ala Ala Ala Met Ala Leu Arg Tyr Pro Met Ala Val Gly Leu  
 20 25 30

Asn Lys Gly His Lys Val Thr Lys Asn Val Ser Lys Pro Arg His Ser  
 35 40 45

Arg Arg Arg Gly Arg Leu Thr Lys His Thr Lys Phe Val Arg Asp Met  
 50 55 60

Ile Arg Glu Val Cys Gly Phe Ala Pro Tyr Glu Arg Arg Ala Met Glu  
 65 70 75 80



1226

Leu Leu Lys Val Ser Lys Asp Lys Arg Ala Leu Lys Phe Ile Lys Lys  
85 90 95

Arg Val Gly Thr His Ile Arg Ala Lys Arg Lys Arg Glu Glu Leu Ser  
100 105 110

Asn Val Leu Ala Ala Met Arg Lys Ala Ala Ala Lys Lys Asp  
115 120 125

<210> 1203

<211> 130

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (27)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1203

Asp Trp Asn Pro Asp Leu Gln Ala Ser Ala Val Cys Ile Lys Arg Val  
1 5 10 15

Gly Glu Ser Gly Pro Leu Ala Gln Glu Pro Xaa Leu Leu Lys Glu Gly  
20 25 30

Phe Lys Ala Lys Trp Val Cys Gln Arg Cys Cys Leu Pro Phe Leu Glu  
35 40 45

Met Leu Ile Ser Leu Ser Lys Thr Glu Lys Ser Arg Cys Tyr Arg Asn  
50 55 60

Asn Leu Val Cys Cys Ile Asn Cys Ser Trp Ala Trp Ser Ser Ile Pro  
65 70 75 80

Thr Leu Arg Phe Pro Ala Ser Leu Cys Cys Pro Gly Ser His Ser Cys  
85 90 95

Arg Arg Pro Asn Pro Leu Ala Val Phe Cys Leu Lys Ile Trp Gly Ala  
100 105 110

Pro Ser Leu Ser Ser Pro Gly Asn Ser Leu Ala Glu Gly Gly Asp Pro  
115 120 125

Pro Gln  
130

1227

<210> 1204  
 <211> 228  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (189)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (196)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (199)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (225)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (228)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1204  
 Trp Ala Ala Phe Glu Pro Ala Thr Leu Ala Trp Lys Phe Pro Phe Gln  
           1                  5                  10                  15  
 Ser Gly Phe Cys Leu Leu Leu Pro Ser Pro Ser Pro Arg Tyr Leu Phe  
                   20                  25                  30  
 Thr Ser His Leu Ile Ser Leu Cys Ser Ser Val Ser Pro Thr His Ile  
           35                  40                  45  
 Ile Gly Asp Ser Gly Gly Ser Leu Thr Ser Leu Leu Ser Asn Ala Arg  
           50                  55                  60  
 Pro Ser Gly Leu Ala Ser Val Ala Ser His Ile Asp Val Thr Leu Glu  
           65                  70                  75                  80  
 Leu Leu Pro Gln Arg Gly Arg Arg Asp Arg Leu Ser Pro His Leu Pro  
                   85                  90                  95  
 Pro Tyr Ser Pro Leu Tyr Ser Arg Phe Asp His Leu Ser Pro Ser Ala  
           100                  105                  110

1228

Ala Pro Ser His Phe Gly Gln Ser Gln Ala Pro Ile Arg Leu Pro Pro  
 115 120 125

Pro Pro Gly Ala Pro Ser Ile Ser Leu Ser Pro Leu Pro Gln Asn Leu  
 130 135 140

Cys Lys Gly Tyr Glu Arg Asp Pro Leu Pro Ser Arg Pro Pro Leu Arg  
 145 150 155 160

Ala Val Arg Ser Lys Lys Gln Lys Leu Val Gly Gly Trp Leu Gly Leu  
 165 170 175

Cys Pro Val Pro Arg Trp Asp Lys Leu Ala Phe Ser Xaa Ile Pro Ser  
 180 185 190

Trp Val Pro Xaa Ser Phe Xaa Ala Pro Gly Ala Arg Thr His Cys Ala  
 195 200 205

Val Phe Leu Phe Ser Phe Val Gly Lys Gly Thr Lys Val Phe Ala Lys  
 210 215 220

Xaa Pro Val Xaa  
 225

&lt;210&gt; 1205

&lt;211&gt; 270

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (128)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1205

Leu Pro Gly Ala Val Ala Ala Ser Ser Gly Ser Pro Pro Gly Ser Ala  
 1 5 10 15

Leu Ala Ala Val Ala Ser Gly Gly Asp Leu Phe Pro Gly Gln Pro Val  
 20 25 30

Ser Glu Leu Ile Ala Gln Leu Leu Arg Ala Glu Pro Tyr Pro Ala Ala  
 35 40 45

Ala Gly Arg Phe Gly Ala Gly Gly Gly Ala Ala Gly Ala Val Leu Gly  
 50 55 60

Ile Asp Asn Val Cys Glu Leu Ala Ala Arg Leu Leu Phe Ser Thr Val

1229

65		70		75		80
Glu Trp Ala Arg His Ala Pro Phe Phe Pro Glu Leu Pro Val Ala Asp						
	85			90		95
Gln Val Ala Leu Leu Arg Leu Ser Trp Ser Glu Leu Phe Val Leu Asn						
	100		105		110	
Ala Ala Gln Ala Ala Leu Pro Leu His Thr Ala Pro Leu Leu Ala Xaa						
	115		120		125	
Ala Gly Leu His Ala Ala Pro Met Ala Ala Glu Arg Ala Val Ala Phe						
	130		135		140	
Met Asp Gln Val Arg Ala Phe Gln Glu Gln Val Asp Lys Leu Gly Arg						
	145		150		155	160
Leu Gln Val Asp Ser Ala Glu Tyr Gly Cys Leu Lys Ala Ile Ala Leu						
	165		170		175	
Phe Thr Pro Asp Ala Cys Gly Leu Ser Asp Pro Ala His Val Glu Ser						
	180		185		190	
Leu Gln Glu Lys Ala Gln Val Ala Leu Thr Glu Tyr Val Arg Ala Gln						
	195		200		205	
Tyr Pro Ser Gln Pro Gln Arg Phe Gly Arg Leu Leu Leu Arg Leu Pro						
	210		215		220	
Ala Leu Arg Ala Val Pro Ala Ser Leu Ile Ser Gln Leu Phe Phe Met						
	225		230		235	240
Arg Leu Val Gly Lys Thr Pro Ile Glu Thr Leu Ile Arg Asp Met Leu						
	245		250		255	
Leu Ser Gly Ser Thr Phe Asn Trp Pro Tyr Gly Ser Gly Gln						
	260		265		270	

&lt;210&gt; 1206

&lt;211&gt; 89

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1206

Met Phe His Cys Ser Asp Lys Tyr Phe Thr Phe Phe Ser Val His Gln
1 5 10 15

Arg Glu Arg Asp Pro Pro Thr Ala Val Thr Ser Lys Cys Ser Cys Ser
20 25 30

1230

Ile Asn Gly Val Thr Asp Thr Glu Val His Ser Trp Phe Leu Ser Arg  
                   35                  40                  45

Val Val Ile Leu Val Ser Trp Ser Leu Gly His Trp Gly Cys Thr Leu  
           50                  55                  60

Lys Ser Pro Asn Arg Leu Ala Ile Lys Ile Asn Lys Ala Ala Ala Pro  
       65                  70                  75                  80

Phe Gln Phe Thr Phe His Leu Thr Gln  
                   85

&lt;210&gt; 1207

&lt;211&gt; 145

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1207

Cys Val Gly Lys Ala Gly Val Glu Leu Gly Cys Ser Gly Glu Gly Val  
       1                  5                  10                  15

Val Lys Lys Ala Ser Ser Arg Gly His Lys Ala Arg Phe Pro Leu Arg  
           20                  25                  30

Ser His Lys Val Leu Ser Pro Ala Pro Gly Ala Gly Gly Val His Gly  
           35                  40                  45

Pro Gly Phe Thr Ser Thr His Pro Ala His Pro Arg Gly Glu Gly Pro  
       50                  55                  60

Arg Ala Pro Gly Pro Ala Ala Asp Arg Ile Leu Cys Lys Leu Cys Ser  
       65                  70                  75                  80

Val His Cys Lys Thr Pro Ala Gln Leu Ala Gly His Met Gln Thr His  
           85                  90                  95

Leu Gly Gly Ala Ala Pro Leu Ser Arg Glu Thr Pro Pro Ser His Ser  
           100                  105                  110

Pro Pro Ala Glu Gly Asp Pro Arg Thr His Gln Val Leu Val Arg Phe  
           115                  120                  125

Val Gln Trp Arg Arg Gln Arg Gln Xaa Arg Gln Arg Gln Gln Arg Gln

1231

130                      135                      140  
 Gln  
 145  
  
 <210> 1208  
 <211> 378  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 1208  
 Ser Ala Ser Arg Ala Thr Ala Met Ser Ser Arg Gly Gly Lys Lys Lys  
   1                      5                      10                      15  
  
 Ser Thr Lys Thr Ser Arg Ser Ala Lys Ala Gly Val Ile Phe Pro Val  
                     20                      25                      30  
  
 Gly Arg Met Leu Arg Tyr Ile Lys Lys Gly His Pro Lys Tyr Arg Ile  
                     35                      40                      45  
  
 Gly Val Gly Ala Pro Val Tyr Met Ala Ala Val Leu Glu Tyr Leu Thr  
   50                      55                      60  
  
 Ala Glu Ile Leu Glu Leu Ala Gly Asn Ala Ala Arg Asp Asn Lys Lys  
   65                      70                      75                      80  
  
 Gly Arg Val Thr Pro Arg His Ile Leu Leu Ala Val Ala Asn Asp Glu  
                     85                      90                      95  
  
 Glu Leu Asn Gln Leu Leu Lys Gly Val Thr Ile Ala Ser Gly Gly Val  
                     100                      105                      110  
  
 Leu Pro Asn Ile His Pro Glu Leu Leu Ala Lys Lys Arg Gly Ser Lys  
                     115                      120                      125  
  
 Gly Lys Leu Glu Ala Ile Ile Thr Pro Pro Pro Ala Lys Lys Ala Lys  
   130                      135                      140  
  
 Ser Pro Ser Gln Lys Lys Pro Val Ser Lys Lys Ala Gly Gly Lys Lys  
   145                      150                      155                      160  
  
 Gly Ala Arg Lys Ser Lys Lys Gln Gly Glu Val Ser Lys Ala Ala Ser  
                     165                      170                      175  
  
 Ala Asp Ser Thr Thr Glu Gly Thr Pro Ala Asp Gly Phe Thr Val Leu  
                     180                      185                      190  
  
 Ser Thr Lys Ser Leu Phe Leu Gly Gln Lys Leu Asn Leu Ile His Ser  
                     195                      200                      205

1232

Glu Ile Ser Asn Leu Ala Gly Phe Glu Val Glu Ala Ile Ile Asn Pro  
 210 215 220  
 Thr Asn Ala Asp Ile Asp Leu Lys Asp Asp Leu Gly Asn Thr Leu Glu  
 225 230 235 240  
 Lys Lys Gly Gly Lys Glu Phe Val Glu Ala Val Leu Glu Leu Arg Lys  
 245 250 255  
 Lys Asn Gly Pro Leu Glu Val Ala Gly Ala Ala Val Ser Ala Gly His  
 260 265 270  
 Gly Leu Pro Ala Lys Phe Val Ile His Cys Asn Ser Pro Val Trp Gly  
 275 280 285  
 Ala Asp Lys Cys Glu Glu Leu Leu Glu Lys Thr Val Lys Asn Cys Leu  
 290 295 300  
 Ala Leu Ala Asp Asp Lys Lys Leu Lys Ser Ile Ala Phe Pro Ser Ile  
 305 310 315 320  
 Gly Ser Gly Arg Asn Gly Phe Pro Lys Gln Thr Ala Ala Gln Leu Ile  
 325 330 335  
 Leu Lys Ala Ile Ser Ser Tyr Phe Val Ser Thr Met Ser Ser Ser Ile  
 340 345 350  
 Lys Thr Val Tyr Phe Val Leu Phe Asp Ser Glu Ser Ile Gly Ile Tyr  
 355 360 365  
 Val Gln Glu Met Ala Lys Leu Asp Ala Asn  
 370 375

&lt;210&gt; 1209

&lt;211&gt; 220

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1233

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1209

Arg	Gly	Gly	Lys	Ile	Xaa	Asp	Thr	Phe	Xaa	Arg	Tyr	Ala	Arg	Arg	Tyr
1				5					10					15	

Arg	Ser	Gly	Ile	Pro	Gly	Ser	Thr	His	Ala	Xaa	Ala	Pro	Gly	Ala	Met
			20					25					30		

Arg	Leu	Ser	Leu	Pro	Leu	Leu	Leu	Leu	Leu	Gly	Ala	Trp	Ala	Ile	
		35					40				45				

Pro	Gly	Gly	Leu	Gly	Asp	Arg	Ala	Pro	Leu	Thr	Ala	Thr	Ala	Pro	Gln
	50					55					60				

Leu	Asp	Asp	Glu	Glu	Met	Tyr	Ser	Ala	His	Met	Pro	Ala	His	Leu	Arg
65					70					75					80

Cys	Asp	Ala	Cys	Arg	Ala	Val	Ala	Tyr	Gln	Met	Trp	Gln	Asn	Leu	Ala
				85					90					95	

Lys	Ala	Glu	Thr	Lys	Leu	His	Thr	Ser	Asn	Ser	Gly	Gly	Arg	Arg	Glu
			100					105					110		

Leu	Ser	Glu	Leu	Val	Tyr	Thr	Asp	Val	Leu	Asp	Arg	Ser	Cys	Ser	Arg
		115					120					125			

Asn	Trp	Gln	Asp	Tyr	Gly	Val	Arg	Glu	Val	Asp	Gln	Val	Lys	Arg	Leu
	130					135					140				

Thr	Gly	Pro	Gly	Leu	Ser	Glu	Gly	Pro	Glu	Pro	Ser	Ile	Ser	Val	Met
145				150						155				160	

Val	Thr	Gly	Gly	Pro	Trp	Pro	Thr	Arg	Leu	Ser	Arg	Thr	Cys	Leu	His
				165					170					175	

Tyr	Leu	Gly	Glu	Phe	Gly	Glu	Asp	Gln	Ile	Tyr	Glu	Ala	His	Gln	Gln
		180						185					190		

Gly	Arg	Gly	Ala	Leu	Glu	Ala	Leu	Leu	Cys	Gly	Gly	Pro	Gln	Gly	Ala
		195					200					205			

Cys	Ser	Glu	Lys	Val	Ser	Ala	Thr	Arg	Glu	Glu	Leu				
	210					215					220				

&lt;210&gt; 1210



1234

&lt;211&gt; 231

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1210

Ala Leu Ser Pro Ala Met Val Val Pro Glu Asp Gln Leu Thr Arg Trp  
 1 5 10 15  
 His Pro Arg Phe Asn Val Asp Glu Val Pro Asp Ile Glu Pro Ala Ala  
 20 25 30  
 Leu Pro Gln Pro Pro Ala Thr Glu Lys Leu Thr Thr Ala Gln Glu Val  
 35 40 45  
 Leu Ala Arg Ala Arg Asn Leu Ile Ser Pro Arg Met Glu Lys Ala Leu  
 50 55 60  
 Ser Gln Leu Ala Leu Arg Ser Ala Ala Pro Ser Ser Pro Gly Ser Pro  
 65 70 75 80  
 Arg Pro Ala Leu Pro Ala Thr Pro Pro Ala Thr Pro Pro Ala Ala Ser  
 85 90 95  
 Pro Ser Ala Leu Lys Gly Val Ser Gln Asp Leu Leu Glu Arg Ile Arg  
 100 105 110  
 Ala Lys Glu Ala Gln Lys Gln Leu Ala Gln Met Thr Arg Cys Pro Glu  
 115 120 125  
 Gln Glu Gln Arg Leu Gln Arg Leu Glu Arg Leu Pro Glu Leu Ala Arg  
 130 135 140  
 Val Leu Arg Ser Val Phe Val Ser Glu Arg Lys Pro Ala Leu Ser Met  
 145 150 155 160  
 Glu Val Ala Cys Ala Arg Met Val Gly Ser Cys Cys Thr Ile Met Ser  
 165 170 175  
 Pro Gly Glu Met Glu Lys His Leu Leu Leu Leu Ser Glu Leu Leu Pro  
 180 185 190  
 Asp Trp Leu Ser Leu His Arg Ile Arg Thr Asp Thr Tyr Val Lys Leu  
 195 200 205  
 Asp Lys Ala Ala Asp Leu Ala His Ile Thr Ala Arg Leu Ala His Gln  
 210 215 220  
 Thr Arg Ala Glu Glu Gly Leu  
 225 230

1235

&lt;210&gt; 1211

&lt;211&gt; 346

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1211

Asn	Cys	Thr	Thr	Ile	Ser	Leu	Val	Tyr	Leu	His	Phe	Val	Phe	Tyr	Asn
1				5				10						15	
Ser	Tyr	Ser	Leu	Phe	Pro	Ser	Lys	Glu	Asn	Cys	Val	Tyr	Glu	Thr	Val
			20					25					30		
Val	Leu	Pro	Leu	Asp	Glu	Arg	Ala	Phe	Glu	Lys	Thr	Leu	Thr	Pro	Ile
		35					40					45			
Ile	Gln	Glu	Tyr	Phe	Glu	His	Gly	Asp	Thr	Asn	Glu	Val	Ala	Glu	Met
	50					55					60				
Leu	Arg	Asp	Leu	Asn	Leu	Gly	Glu	Met	Lys	Ser	Gly	Val	Pro	Val	Leu
65				70					75						80
Ala	Val	Ser	Leu	Ala	Leu	Glu	Gly	Lys	Ala	Ser	His	Arg	Glu	Met	Thr
			85					90						95	
Ser	Lys	Leu	Leu	Ser	Asp	Leu	Cys	Gly	Thr	Val	Met	Ser	Thr	Thr	Asp
		100						105					110		
Val	Glu	Lys	Ser	Phe	Asp	Lys	Leu	Leu	Lys	Asp	Leu	Pro	Glu	Leu	Ala
	115						120					125			
Leu	Asp	Thr	Pro	Arg	Ala	Pro	Gln	Leu	Val	Gly	Gln	Phe	Ile	Ala	Arg
	130					135					140				
Ala	Val	Gly	Asp	Gly	Ile	Leu	Cys	Asn	Thr	Tyr	Ile	Asp	Ser	Tyr	Lys
145					150				155					160	
Gly	Thr	Val	Asp	Cys	Val	Gln	Ala	Arg	Ala	Ala	Leu	Asp	Lys	Ala	Thr
			165					170					175		
Val	Leu	Leu	Ser	Met	Ser	Lys	Gly	Gly	Lys	Arg	Lys	Asp	Ser	Val	Trp
		180						185					190		
Gly	Ser	Gly	Gly	Gly	Gln	Gln	Ser	Val	Asn	His	Leu	Val	Lys	Glu	Ile
	195					200						205			
Asp	Met	Leu	Leu	Lys	Glu	Tyr	Leu	Leu	Ser	Gly	Asp	Ile	Ser	Glu	Ala
	210					215					220				
Glu	His	Cys	Leu	Lys	Glu	Leu	Glu	Val	Pro	His	Phe	His	His	Glu	Leu
225					230					235				240	

1236

Val	Tyr	Glu	Ala	Ile	Ile	Met	Val	Leu	Glu	Ser	Thr	Gly	Glu	Ser	Thr
				245					250					255	
Phe	Lys	Met	Ile	Leu	Asp	Leu	Leu	Lys	Ser	Leu	Trp	Lys	Ser	Ser	Thr
			260					265					270		
Ile	Thr	Val	Asp	Gln	Met	Lys	Arg	Gly	Tyr	Glu	Arg	Ile	Tyr	Asn	Glu
		275					280					285			
Ile	Pro	Asp	Ile	Asn	Leu	Asp	Val	Pro	His	Ser	Tyr	Ser	Val	Leu	Glu
	290					295					300				
Arg	Phe	Val	Glu	Glu	Cys	Phe	Gln	Ala	Gly	Ile	Ile	Ser	Lys	Gln	Leu
305					310					315					320
Arg	Asp	Leu	Cys	Pro	Ser	Arg	Gly	Arg	Lys	Arg	Phe	Val	Ser	Glu	Gly
			325						330					335	
Asp	Gly	Gly	Arg	Leu	Lys	Pro	Glu	Ser	Tyr						
			340					345							

<210> 1212

<211> 175

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (63)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1212

Pro	Arg	Xaa	Ile	Val	Ser	Ala	Ala	Cys	Gly	Arg	Asn	His	Thr	Leu	Ala
1				5					10					15	
Leu	Thr	Glu	Thr	Gly	Ser	Val	Phe	Ala	Phe	Gly	Glu	Asn	Lys	Met	Gly
			20					25					30		
Gln	Leu	Gly	Leu	Gly	Asn	Gln	Thr	Asp	Ala	Val	Pro	Ser	Pro	Ala	Gln
		35					40					45			
Ile	Met	Tyr	Asn	Gly	Gln	Pro	Ile	Thr	Lys	Met	Ala	Cys	Gly	Xaa	Glu
	50					55					60				

1237

Phe Ser Met Ile Met Asp Cys Lys Gly Asn Leu Tyr Ser Phe Gly Cys  
 65 70 75 80  
 Pro Glu Tyr Gly Gln Leu Gly His Asn Ser Asp Gly Lys Phe Ile Ala  
 85 90 95  
 Arg Ala Gln Arg Ile Glu Tyr Asp Cys Glu Leu Val Pro Arg Arg Val  
 100 105 110  
 Ala Ile Phe Ile Glu Lys Thr Lys Asp Gly Gln Ile Leu Pro Val Pro  
 115 120 125  
 Asn Val Val Val Arg Asp Val Ala Cys Gly Ala Asn His Thr Leu Val  
 130 135 140  
 Leu Asp Ser Gln Lys Arg Val Phe Ser Trp Gly Phe Gly Gly Tyr Gly  
 145 150 155 160  
 Arg Leu Gly Thr Gln Ser Arg Arg Met Arg Trp Ser Pro Ala Trp  
 165 170 175

&lt;210&gt; 1213

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1213

Cys Phe Ile Cys Val Trp Cys Lys Arg Lys Leu Asp Gln Ile Asn Leu  
 1 5 10 15  
 Gln Leu Met Ser Pro Asn Ala Asn Thr Gly Thr His Met His Thr Pro  
 20 25 30  
 Ile Asn Thr His Thr Val His Leu Xaa Lys Gly Gln Val Ile Ser His  
 35 40 45  
 Pro Asn Phe Thr Ser Thr Asp Pro Leu Ala Pro Thr Pro Ala Ser Thr  
 50 55 60  
 Val Thr Ser Lys Ala Arg Ala Thr Cys Ala His Gln Thr Cys Ile Lys  
 65 70 75 80  
 Gln Leu Ala Gly Asp Gly Cys Gly Ala Gly Gly Leu Ser Asp Gly Ser

1238

	85		90		95
Leu Leu Leu Pro Leu Leu Arg Val Lys Leu Leu Ser Phe Leu Arg Val					
	100		105		110
Tyr Leu Cys Gln Val Cys Ala Phe Asn Cys Phe Tyr Phe Val Phe					
	115		120		125

&lt;210&gt; 1214

&lt;211&gt; 146

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1214

Cys Thr Trp Asn Arg Cys Ser Ala Ser Pro Ala Gly Trp Gln Asn Ser					
1		5		10	15
Phe Leu Gly His Leu Asn Pro Ser Ser Leu Leu Gln Asn Pro Pro Ala					
	20		25		30
Asn Arg Ile Gly Met Gly Ala Thr Leu Asp Ile Gln Arg Gln Gln Arg					
	35		40		45
Met Glu Leu Leu Asp Arg Gln Leu Met Phe Ser Gln Phe Ala Gln Gly					
	50		55		60
Arg Arg Gln Arg Gln Gln Gln Gly Gly Met Ile Asn Trp Asn Arg Leu					
	65		70		75
Phe Pro Pro Leu Arg Gln Arg Gln Asn Val Asn Tyr Gln Gly Gly Arg					
	85		90		95
Gln Ser Glu Pro Ala Ala Pro Pro Leu Glu Val Ser Glu Glu Gln Val					
	100		105		110
Ala Arg Leu Met Glu Met Gly Phe Ser Arg Gly Asp Ala Leu Glu Ala					
	115		120		125
Leu Arg Ala Ser Asn Asn Asp Leu Asn Val Ala Thr Asn Phe Leu Leu					
	130		135		140
Gln His					
145					

&lt;210&gt; 1215

&lt;211&gt; 116

&lt;212&gt; PRT

1239

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (107)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1215

Leu	Lys	Asn	His	Gln	Lys	Thr	His	Thr	Ser	Glu	Lys	Ser	Tyr	Lys	Cys
1				5					10					15	

Asn	Glu	Cys	Arg	Lys	Ala	Phe	Ser	Tyr	Cys	Ser	Gly	Leu	Ile	Gln	Cys
			20					25					30		

Gln	Val	Ile	His	Thr	Ile	Glu	Lys	Pro	Tyr	Glu	Tyr	Gly	Lys	Cys	Gly
		35					40					45			

Lys	Ala	Phe	Arg	Gln	Arg	Thr	Asp	Leu	Lys	Lys	His	Gln	Lys	Met	His
	50					55					60				

Thr	Glu	Glu	Lys	Pro	Tyr	Glu	Cys	Asn	Glu	Cys	Gly	Lys	Ala	Phe	Ser
65					70					75					80

Gln	Ser	Thr	Tyr	Leu	Thr	Lys	His	Gln	Lys	Ile	His	Ser	Glu	Glu	Lys
				85					90					95	

Ser	Asn	Ile	His	Thr	Glu	Cys	Gly	Glu	Thr	Xaa	Xaa	Gln	Asn	Ser	Ser
			100						105					110	

Phe	Leu	Gln	Gln
			115

&lt;210&gt; 1216

&lt;211&gt; 201

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1216

Ala	Ala	Gly	Gly	Glu	Gly	Phe	Gly	Ser	Leu	His	Ala	Ser	Leu	Val	Gly
1				5					10					15	

Phe	Arg	Gly	Val	Val	Ala	Gly	Cys	Ala	Arg	His	Phe	Arg	Ala	Ser	Arg
			20					25					30		

1240

Asn Gly Val Ala Asn Gly Leu Gln Ser Asn Met Pro Lys Phe Tyr Cys  
                   35                                  40                                  45  
 Asp Tyr Cys Asp Thr Tyr Leu Thr His Asp Ser Pro Ser Val Arg Lys  
                   50                                  55                                  60  
 Thr His Cys Ser Gly Arg Lys His Lys Glu Asn Val Lys Asp Tyr Tyr  
                   65                                  70                                  75                                  80  
 Gln Lys Trp Met Glu Glu Gln Ala Gln Ser Leu Ile Asp Lys Thr Thr  
                                   85                                  90                                  95  
 Ala Ala Phe Gln Gln Gly Lys Ile Pro Pro Thr Pro Phe Ser Ala Pro  
                                   100                                  105                                  110  
 Pro Pro Ala Gly Ala Met Ile Pro Pro Pro Pro Ser Leu Pro Gly Pro  
                                   115                                  120                                  125  
 Pro Arg Pro Gly Met Met Pro Ala Pro His Met Gly Gly Pro Pro Met  
                                   130                                  135                                  140  
 Met Pro Met Met Gly Pro Pro Pro Pro Gly Met Met Pro Val Gly Pro  
                                   145                                  150                                  155                                  160  
 Ala Pro Gly Met Arg Pro Pro Met Gly Gly His Met Pro Met Met Pro  
                                   165                                  170                                  175  
 Gly Pro Pro Met Met Arg Pro Pro Ala Arg Pro Met Met Val Pro Thr  
                                   180                                  185                                  190  
 Arg Pro Gly Met Thr Arg Pro Asp Arg  
                                   195                                  200

&lt;210&gt; 1217

&lt;211&gt; 473

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1217

Lys Phe Thr Met Lys Phe Leu Leu Ile Leu Leu Leu Gln Ala Thr Ala  
                   1                                  5                                  10                                  15  
 Ser Gly Ala Leu Pro Leu Asn Ser Ser Thr Ser Leu Glu Lys Asn Asn  
                                   20                                  25                                  30  
 Val Leu Phe Gly Glu Arg Tyr Leu Glu Lys Phe Tyr Gly Leu Glu Ile  
                                   35                                  40                                  45  
 Asn Lys Leu Pro Val Thr Lys Met Lys Tyr Ser Gly Asn Leu Met Lys

1241

50	55	60
Glu Lys Ile Gln Glu Met Gln His Phe Leu Gly Leu Lys Val Thr Gly		
65	70	75 80
Gln Leu Asp Thr Ser Thr Leu Glu Met Met His Ala Pro Arg Cys Gly		
	85	90 95
Val Pro Asp Val His His Phe Arg Glu Met Pro Gly Gly Pro Val Trp		
	100	105 110
Arg Lys His Tyr Ile Thr Tyr Arg Ile Asn Asn Tyr Thr Pro Asp Met		
	115	120 125
Asn Arg Glu Asp Val Asp Tyr Ala Ile Arg Lys Ala Phe Gln Val Trp		
	130	135 140
Ser Asn Val Thr Pro Leu Lys Phe Ser Lys Ile Asn Thr Gly Met Ala		
	145	150 155 160
Asp Ile Leu Val Val Phe Ala Arg Gly Ala His Gly Asp Phe His Ala		
	165	170 175
Phe Asp Gly Lys Gly Gly Ile Leu Ala His Ala Phe Gly Pro Gly Ser		
	180	185 190
Gly Ile Gly Gly Asp Ala His Phe Asp Glu Asp Glu Phe Trp Thr Thr		
	195	200 205
His Ser Gly Gly Thr Asn Leu Phe Leu Thr Ala Val His Glu Ile Gly		
	210	215 220
His Ser Leu Gly Leu Gly His Ser Ser Asp Pro Lys Ala Val Met Phe		
	225	230 235 240
Pro Thr Tyr Lys Tyr Val Asp Ile Asn Thr Phe Arg Leu Ser Ala Asp		
	245	250 255
Asp Ile Arg Gly Ile Gln Ser Leu Tyr Gly Asp Pro Lys Glu Asn Gln		
	260	265 270
Arg Leu Pro Asn Pro Asp Asn Ser Glu Pro Ala Leu Cys Asp Pro Asn		
	275	280 285
Leu Ser Phe Asp Ala Val Thr Thr Val Gly Asn Lys Ile Phe Phe Phe		
	290	295 300
Lys Asp Arg Phe Phe Trp Leu Lys Val Ser Glu Arg Pro Lys Thr Ser		
	305	310 315 320
Val Asn Leu Ile Ser Ser Leu Trp Pro Thr Leu Pro Ser Gly Ile Glu		



1242

325	330	335
Ala Ala Tyr Glu Ile Glu Ala Arg Asn Gln Val Phe Leu Phe Lys Asp		
340	345	350
Asp Lys Tyr Trp Leu Ile Ser Asn Leu Arg Pro Glu Pro Asn Tyr Pro		
355	360	365
Lys Ser Ile His Ser Phe Gly Phe Pro Asn Phe Val Lys Lys Ile Asp		
370	375	380
Ala Ala Val Phe Asn Pro Arg Phe Tyr Arg Thr Tyr Phe Phe Val Asp		
385	390	400
Asn Gln Tyr Trp Arg Tyr Asp Glu Arg Arg Gln Met Met Asp Pro Gly		
405	410	415
Tyr Pro Lys Leu Ile Thr Lys Asn Phe Gln Gly Ile Gly Pro Lys Ile		
420	425	430
Asp Ala Val Phe Tyr Ser Lys Asn Lys Tyr Tyr Tyr Phe Phe Gln Gly		
435	440	445
Ser Asn Gln Phe Glu Tyr Asp Phe Leu Leu Gln Arg Ile Thr Lys Thr		
450	455	460
Leu Lys Ser Asn Ser Trp Phe Gly Cys		
465	470	

&lt;210&gt; 1218

&lt;211&gt; 598

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (144)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1218

Ala Thr Ser Arg Gln Pro Ser Tyr Xaa Arg Thr Trp Cys Arg Arg Cys

1

5

10

15

Cys Leu Pro Leu Ala Leu Asn Pro Val Pro Ala Ala Met Ala Pro Gly

1243

	20		25		30
Gln Leu Ala Leu Phe Ser Val Ser Asp Lys Thr Gly Leu Val Glu Phe	35	40	45		
Ala Arg Asn Leu Thr Ala Leu Gly Leu Asn Leu Val Ala Ser Gly Gly	50	55	60		
Thr Ala Lys Ala Leu Arg Asp Ala Gly Leu Ala Val Arg Asp Val Ser	65	70	75	80	
Glu Leu Thr Gly Phe Pro Glu Met Leu Gly Gly Arg Val Lys Thr Leu	85	90	95		
His Pro Ala Val His Ala Gly Ile Leu Ala Arg Asn Ile Pro Glu Asp	100	105	110		
Asn Ala Asp Met Ala Arg Leu Asp Phe Asn Leu Ile Arg Val Val Ala	115	120	125		
Cys Asn Leu Tyr Pro Phe Val Lys Thr Val Ala Ser Pro Gly Val Xaa	130	135	140		
Val Glu Glu Ala Val Glu Gln Ile Asp Ile Gly Gly Val Thr Leu Leu	145	150	155	160	
Arg Ala Ala Ala Lys Asn His Ala Arg Val Thr Val Val Cys Glu Pro	165	170	175		
Glu Asp Tyr Val Val Val Ser Thr Glu Met Gln Ser Ser Glu Ser Lys	180	185	190		
Asp Thr Ser Leu Glu Thr Arg Arg Gln Leu Ala Leu Lys Ala Phe Thr	195	200	205		
His Thr Ala Gln Tyr Asp Glu Ala Ile Ser Asp Tyr Phe Arg Lys Gln	210	215	220		
Tyr Ser Lys Gly Val Ser Gln Met Pro Leu Arg Tyr Gly Met Asn Pro	225	230	235	240	
His Gln Thr Pro Ala Gln Leu Tyr Thr Leu Gln Pro Lys Leu Pro Ile	245	250	255		
Thr Val Leu Asn Gly Ala Pro Gly Phe Ile Asn Leu Cys Asp Ala Leu	260	265	270		
Asn Ala Trp Gln Leu Val Lys Glu Leu Lys Glu Ala Leu Gly Ile Pro	275	280	285		
Ala Ala Ala Ser Phe Lys His Val Ser Pro Ala Gly Ala Ala Val Gly					

1244

290	295	300
Ile Pro Leu Ser Glu Asp Glu Ala Lys Val Cys Met Val Tyr Asp Leu		
305	310	315 320
Tyr Lys Thr Leu Thr Pro Ile Ser Ala Ala Tyr Ala Arg Ala Arg Gly		
	325	330 335
Ala Asp Arg Met Ser Ser Phe Gly Asp Phe Val Ala Leu Ser Asp Val		
	340	345 350
Cys Asp Val Pro Thr Ala Lys Ile Ile Ser Arg Glu Val Ser Asp Gly		
	355	360 365
Ile Ile Ala Pro Gly Tyr Glu Glu Glu Ala Leu Thr Ile Leu Ser Lys		
	370	375 380
Lys Lys Asn Gly Asn Tyr Cys Val Leu Gln Met Asp Gln Ser Tyr Lys		
	385	390 395 400
Pro Asp Glu Asn Glu Val Arg Thr Leu Phe Gly Leu His Leu Ser Gln		
	405	410 415
Lys Arg Asn Asn Gly Val Val Asp Lys Ser Leu Phe Ser Asn Val Val		
	420	425 430
Thr Lys Asn Lys Asp Leu Pro Glu Ser Ala Leu Arg Asp Leu Ile Val		
	435	440 445
Ala Thr Ile Ala Val Lys Tyr Thr Gln Ser Asn Ser Val Cys Tyr Ala		
	450	455 460
Lys Asn Gly Gln Val Ile Gly Ile Gly Ala Gly Gln Gln Ser Arg Ile		
	465	470 475 480
His Cys Thr Arg Leu Ala Gly Asp Lys Ala Asn Tyr Trp Trp Leu Arg		
	485	490 495
His His Pro Gln Val Leu Ser Met Lys Phe Lys Thr Gly Val Lys Arg		
	500	505 510
Ala Glu Ile Ser Asn Ala Ile Asp Gln Tyr Val Thr Gly Thr Ile Gly		
	515	520 525
Glu Asp Glu Asp Leu Ile Lys Trp Lys Ala Leu Phe Glu Glu Val Pro		
	530	535 540
Glu Leu Leu Thr Glu Ala Glu Lys Lys Glu Trp Val Glu Lys Leu Thr		
	545	550 555 560
Glu Val Ser Ile Ser Ser Asp Ala Phe Phe Pro Phe Arg Asp Asn Val		

1245

565                      570                      575  
 Asp Arg Ala Lys Arg Ser Gly Val Ala Tyr Ile Ala Ala Pro Pro Val  
                     580                      585                      590

Leu Leu Leu Thr Lys Leu  
                     595

&lt;210&gt; 1219

&lt;211&gt; 209

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1219

Tyr Thr Ala Ile Met Ser Ile Met Ser Tyr Asn Gly Gly Ala Val Met  
       1                      5                      10                      15

Ala Met Lys Gly Lys Asn Cys Val Ala Ile Ala Ala Asp Arg Arg Phe  
                     20                      25                      30

Gly Ile Gln Ala Gln Met Val Thr Thr Asp Phe Gln Lys Ile Phe Pro  
                     35                      40                      45

Met Gly Asp Arg Leu Tyr Ile Gly Leu Ala Gly Leu Ala Thr Asp Val  
                     50                      55                      60

Gln Thr Val Ala Gln Arg Leu Lys Phe Arg Leu Asn Leu Tyr Glu Leu  
       65                      70                      75                      80

Lys Glu Gly Arg Gln Ile Lys Pro Tyr Thr Leu Met Ser Met Val Ala  
                     85                      90                      95

Asn Leu Leu Tyr Glu Lys Arg Phe Gly Pro Tyr Tyr Thr Glu Pro Val  
                     100                      105                      110

Ile Ala Gly Leu Asp Pro Lys Thr Phe Lys Pro Phe Ile Cys Ser Leu  
                     115                      120                      125

Asp Leu Ile Gly Cys Pro Met Val Thr Asp Asp Phe Val Val Ser Gly  
                     130                      135                      140

Thr Cys Ala Glu Gln Met Tyr Gly Met Cys Glu Ser Leu Trp Glu Pro  
       145                      150                      155                      160

Asn Met Asp Pro Asp His Leu Phe Glu Thr Ile Ser Gln Ala Met Leu  
                     165                      170                      175

Asn Ala Val Asp Arg Asp Ala Val Ser Gly Met Gly Val Ile Val His  
                     180                      185                      190

1246

Ile Ile Glu Lys Asp Lys Ile Thr Thr Arg Thr Leu Lys Ala Arg Met  
 195 200 205

Asp

&lt;210&gt; 1220

&lt;211&gt; 140

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (77)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1220

Ile Ile Ser Ile Ile Ser Thr Ser Asn Lys Ile Lys Met Ser Glu Ala  
 1 5 10 15

Pro Arg Phe Phe Val Gly Pro Glu Asp Thr Glu Ile Asn Pro Gly Asn  
 20 25 30

Tyr Arg His Phe Phe His His Ala Asp Glu Asp Asp Glu Glu Glu Asp  
 35 40 45

Asp Ser Xaa Pro Glu Arg Gln Ile Val Val Gly Ile Cys Ser Met Xaa  
 50 55 60

Lys Lys Ser Lys Ser Lys Pro Met Lys Glu Ile Leu Xaa Arg Ile Ser  
 65 70 75 80

Leu Phe Lys Tyr Ile Thr Val Val Val Phe Glu Glu Glu Val Ile Leu  
 85 90 95

Asn Glu Pro Val Glu Asn Trp Pro Leu Cys Asp Cys Leu Ile Ser Phe  
 100 105 110

1247

His Ser Lys Gly Phe Pro Leu Asp Lys Ala Val Ala Tyr Ala Lys Leu  
 115 120 125

Arg Asn Pro Phe Val Ile Asn Asp Leu Asn Met Gln  
 130 135 140

&lt;210&gt; 1221

&lt;211&gt; 45

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1221

Gly Leu Met Glu Ile Glu Ile Thr Cys Lys Asp Ile Thr Val Phe Met  
 1 5 10 15

Ser Tyr Ile Leu Val Leu Glu Ile Val Glu Cys Met Ile Asp Asn Ile  
 20 25 30

Phe Leu Ile Phe Ile Phe Ser Ser Asn Thr Ser Thr Val  
 35 40 45

&lt;210&gt; 1222

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1222

Val Ala Tyr Ile Cys Tyr Ser Lys Phe Cys Lys Tyr Ala Asn Gln Leu  
 1 5 10 15

Tyr Arg Phe Ile Thr Ser Phe Leu Gly Phe Phe Trp Gly Arg Val Ile  
 20 25 30

Ile Leu Leu Lys Ile Thr Met Asn Thr Leu Thr Val Arg Ile Cys Gly  
 35 40 45

Lys Val Pro Leu Asn Ile Thr Lys Ile Ile Ser Leu Glu Gly Arg Asn  
 50 55 60

Asn His Ser Asn Glu Leu  
 65 70

&lt;210&gt; 1223

&lt;211&gt; 88

&lt;212&gt; PRT

1248

&lt;213&gt; Homo sapiens

&lt;400&gt; 1223

Phe Tyr Pro Ser Thr Tyr Leu Lys Ala Pro Ser Ser Leu Val Cys Gly  
 1 5 10 15

Val Leu Glu Pro Val Ser Ser Phe Trp Arg Phe Lys Leu Asn Ser Asn  
 20 25 30

Asn Tyr Val Thr Gln Ser Met Trp Arg Lys Ser Glu Thr Ser His Gly  
 35 40 45

Asp Ala Gly Pro Arg Ala Arg Pro Ala Val Trp Pro Ala Leu Leu Thr  
 50 55 60

Ser Val Ser Arg Ser Phe Pro Ser His Glu Val Pro Ser Gly His Gly  
 65 70 75 80

Asp Glu Gly Arg Glu Gly Thr Gly  
 85

&lt;210&gt; 1224

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (279)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1224

Ala Thr Arg Arg Arg Ala Ala Glu Ala Gly Met Ala Ala Val Leu Gln  
 1 5 10 15

Arg Val Glu Arg Leu Ser Asn Arg Val Val Arg Val Leu Gly Cys Asn  
 20 25 30

Pro Gly Pro Met Thr Leu Gln Gly Thr Asn Thr Tyr Leu Val Gly Thr  
 35 40 45

Gly Pro Arg Arg Ile Leu Ile Asp Thr Gly Glu Pro Ala Ile Pro Glu  
 50 55 60

Tyr Ile Ser Cys Leu Lys Gln Ala Leu Thr Glu Phe Asn Thr Ala Ile  
 65 70 75 80

Gln Glu Ile Val Val Thr His Trp His Arg Asp His Ser Gly Gly Ile  
 85 90 95

1249

Gly Asp Ile Cys Lys Ser Ile Asn Asn Asp Thr Thr Tyr Cys Ile Lys  
                   100                  105                  110  
 Lys Leu Pro Arg Asn Pro Gln Arg Glu Glu Ile Ile Gly Asn Gly Glu  
                   115                  120                  125  
 Gln Gln Tyr Val Tyr Leu Lys Asp Gly Asp Val Ile Lys Thr Glu Gly  
                   130                  135                  140  
 Ala Thr Leu Arg Val Leu Tyr Thr Pro Gly His Thr Asp Asp His Met  
                   145                  150                  155                  160  
 Ala Leu Leu Leu Glu Glu Glu Asn Ala Ile Phe Ser Gly Asp Cys Ile  
                   165                  170                  175  
 Leu Gly Glu Gly Thr Thr Val Phe Glu Asp Leu Tyr Asp Tyr Met Asn  
                   180                  185                  190  
 Ser Leu Lys Glu Leu Leu Lys Ile Lys Ala Asp Ile Ile Tyr Pro Gly  
                   195                  200                  205  
 His Gly Pro Val Ile His Asn Ala Glu Ala Lys Ile Gln Gln Tyr Ile  
                   210                  215                  220  
 Ser His Arg Asn Ile Arg Glu Gln Gln Ile Leu Thr Leu Phe Arg Glu  
                   225                  230                  235                  240  
 Asn Phe Glu Lys Ser Phe Thr Val Met Glu Leu Val Lys Ile Ile Tyr  
                   245                  250                  255  
 Lys Asn Thr Pro Glu Asn Leu His Glu Met Ala Lys His Asn Leu Leu  
                   260                  265                  270  
 Leu His Leu Lys Lys Leu Xaa Lys Glu Gly Lys Ile Phe Ser Asn Thr  
                   275                  280                  285  
 Asp Pro Asp Lys Lys Trp Lys Ala His Leu  
                   290                  295

&lt;210&gt; 1225

&lt;211&gt; 27

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1225

Val Ser Gly Asp Tyr Gly His Pro Val Tyr Ile Val Gln Asp Gly Pro  
   1                  5                  10                  15



1250

Pro Gln Ser Pro Pro Asn Ile Tyr Tyr Lys Val  
                   20                  25

&lt;210&gt; 1226

&lt;211&gt; 380

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1226

Glu Gln Glu Leu Asp Thr Leu Lys Arg Lys Ser Pro Ser Asp Leu Trp  
   1                  5                  10                  15

Lys Glu Asp Leu Ala Thr Phe Ile Glu Glu Leu Glu Ala Val Glu Ala  
                   20                  25                  30

Lys Glu Lys Gln Asp Glu Gln Val Gly Leu Pro Gly Lys Val Gly Lys  
                   35                  40                  45

Ala Lys Gly Lys Lys Thr Gln Met Ala Glu Val Leu Pro Ser Pro Arg  
                   50                  55                  60

Gly Gln Arg Val Ile Pro Arg Ile Thr Ile Glu Met Lys Ala Glu Ala  
   65                  70                  75                  80

Glu Lys Lys Asn Lys Lys Lys Ile Lys Asn Glu Asn Thr Glu Gly Ser  
                   85                  90                  95

Pro Gln Glu Asp Gly Val Glu Leu Glu Gly Leu Lys Gln Arg Leu Glu  
                   100                  105                  110

Lys Lys Gln Lys Arg Glu Pro Gly Thr Lys Thr Lys Lys Gln Thr Thr  
                   115                  120                  125

Leu Ala Phe Lys Pro Ile Lys Lys Gly Lys Lys Arg Asn Pro Trp Ser  
                   130                  135                  140

Asp Ser Glu Ser Asp Arg Ser Ser Asp Glu Ser Asn Phe Asp Val Pro  
   145                  150                  155                  160

Pro Arg Glu Thr Glu Pro Arg Arg Ala Ala Thr Lys Thr Lys Phe Thr  
                   165                  170                  175

Met Asp Leu Asp Ser Asp Glu Asp Phe Ser Asp Phe Asp Glu Lys Thr  
                   180                  185                  190

Asp Asp Glu Asp Phe Val Pro Ser Asp Ala Ser Pro Pro Lys Thr Lys  
                   195                  200                  205

Thr Ser Pro Lys Leu Ser Asn Lys Glu Leu Lys Pro Gln Lys Ser Val

1251

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210                215                220
Val Ser Asp Leu Glu Ala Asp Asp Val Lys Gly Ser Val Pro Leu Ser
225                230                235                240
Ser Ser Pro Pro Ala Thr His Phe Pro Asp Glu Thr Glu Ile Thr Asn
                245                250                255
Pro Val Pro Lys Lys Asn Val Thr Val Lys Lys Thr Ala Ala Lys Ser
                260                265                270
Gln Ser Ser Thr Ser Thr Thr Gly Ala Lys Lys Arg Ala Ala Pro Lys
                275                280                285
Gly Thr Lys Arg Asp Pro Ala Leu Asn Ser Gly Val Ser Gln Lys Pro
                290                295                300
Asp Pro Ala Lys Thr Lys Asn Arg Arg Lys Arg Lys Pro Ser Thr Ser
305                310                315                320
Asp Asp Ser Asp Ser Asn Phe Glu Lys Ile Val Ser Lys Ala Val Thr
                325                330                335
Ser Lys Lys Ser Lys Gly Glu Ser Asp Asp Phe His Met Asp Phe Asp
                340                345                350
Ser Ala Val Ala Pro Arg Ala Lys Ser Val Arg Ala Lys Lys Pro Ile
                355                360                365
Lys Tyr Leu Glu Glu Ser Asp Glu Asp Asp Leu Phe
                370                375                380

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&lt;210&gt; 1227

&lt;211&gt; 78

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1227

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Phe Asn Ser Leu Lys Cys Leu Phe Gly Ile Met Ile Gly Asn Leu Asp
1                5                10                15

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Glu Phe Arg Gly Lys Lys Leu Ser Ala Xaa Met Leu Arg Ala His Leu
                20                25                30

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1252

Ser Pro His Thr Pro Thr Glu Leu Thr Gly Leu Gln Cys Phe Ile Arg  
                   35                  40                  45

Lys Phe Pro Ile Pro Leu Ser Cys Val Phe Met Leu Lys Ile Leu Leu  
           50                  55                  60

His Phe Ser Phe Glu Cys Gln Phe Leu Thr Ser Thr Ile Ser  
   65                  70                  75

&lt;210&gt; 1228

&lt;211&gt; 222

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (142)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1228

Ala Asn Glu Lys Val Ala Leu Gln Lys Ala Leu Leu Tyr Tyr Glu Ser  
   1                  5                  10                  15

Ile His Gly Arg Pro Val Thr Lys Asn Glu Arg Gln Val Met Lys Pro  
           20                  25                  30

Leu Tyr Asp Arg Tyr Arg Leu Val Lys Gln Ile Leu Ser Arg Ala Asn  
           35                  40                  45

Thr Ile Pro Ile Ile Gly Ser Pro Ser Ser Lys Arg Arg Ser Pro Leu  
   50                  55                  60

Leu Gln Pro Ile Ile Glu Gly Glu Thr Ala Ser Phe Phe Lys Glu Ile  
   65                  70                  75                  80

Lys Glu Glu Glu Glu Gly Ser Glu Asp Asp Ser Asn Val Lys Pro Asp  
                   85                  90                  95

Phe Met Val Thr Leu Lys Thr Asp Phe Ser Ala Arg Cys Phe Leu Asp  
           100                  105                  110

Gln Phe Glu Asp Asp Ala Asp Gly Phe Ile Ser Pro Met Asp Asp Lys  
           115                  120                  125

Ile Pro Ser Lys Cys Ser Gln Asp Thr Gly Leu Ser Asn Xaa His Ala  
   130                  135                  140

Ala Ser Ile Pro Glu Leu Leu Glu His Leu Gln Glu Met Arg Glu Glu  
  145                  150                  155                  160

1253

Lys Lys Arg Ile Arg Lys Lys Leu Arg Asp Phe Glu Asp Asn Phe Phe  
165 170 175

Arg Gln Asn Gly Arg Asn Val Gln Lys Glu Asp Arg Thr Pro Met Ala  
180 185 190

Glu Glu Tyr Ser Glu Tyr Lys His Ile Lys Ala Lys Leu Arg Leu Leu  
195 200 205

Glu Val Leu Ile Ser Lys Arg Asp Thr Asp Ser Lys Ser Met  
210 215 220

<210> 1229

<211> 220

<212> PRT

<213> Homo sapiens

<400> 1229

Lys Gly Ser Thr Leu Gly His Leu Cys Thr Ala Met Ala Gly Met Met  
1 5 10 15

Lys Gly Ile Arg Trp Ser Cys Pro Ala Ile Ala Ser Ile Ser Gln Thr  
20 25 30

Arg Ser Ser Gln Glu Lys Asp Ser Ser Ser Pro Pro Trp Asp Leu Arg  
35 40 45

Arg Ala Ala Thr Glu Gly Glu Ala Pro Asp Ala Leu Cys Gln Ser Gln  
50 55 60

Val	Arg	Gly	Gln	Ser	Ser	Pro	Cys	His	Pro	Trp	Cys	Arg	Pro	Ala	Pro
65					70					75					80

Ser Ser Phe Met Pro Gly Pro Ala Gly Thr Pro Ala Thr Thr Glu Ser  
85 90 95

Thr Arg Ser Ala Leu Cys Ser Trp Arg Arg His Ser Arg Val Glu Ser  
100 105 110

Cys Pro Ser Leu Ser Leu Gly His Leu Gly Gly Glu Ser Gly Leu Arg  
115 120 125

Ser Glu Leu Asp Pro Gly Asp Leu Gly Ser Phe Phe Leu Ala His Gln  
130 135 140

Pro	Cys	Arg	Pro	His	Leu	Ser	Gln	Asn	Pro	Leu	Cys	Leu	Gly	Gly	Ser
145					150					155					160

1254

Gly Ser Ala Leu Leu Cys Ser Arg Arg Leu Gly Ser Gly Gln His Gln  
                     165                    170                    175  
 Val Gly Lys Trp Ser Pro Pro Ser Cys Phe Cys Arg Ile Leu Thr Val  
                     180                    185                    190  
 Gly Leu Glu Glu Lys Ser Ile Asp Leu Ile Ser Pro Thr Thr His Pro  
                     195                    200                    205  
 Ser Phe Ser Phe Phe His His Ser Pro Pro Gln Leu  
                     210                    215                    220

&lt;210&gt; 1230

&lt;211&gt; 183

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (12)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1230

Glu Leu Lys Arg Leu Thr Ile Gly Lys Asn Xaa Xaa Arg Leu Thr Gly  
   1                    5                    10                    15

Asn Arg Xaa Gly Ile Pro Gly Ser Thr His Ala Ser Glu Xaa Glu Val  
                     20                    25                    30

Glu Glu Glu Gly Asp Val Asp Ser Asp Glu Glu Glu Glu Asp Glu  
                     35                    40                    45

Glu Ser Ser Ser Glu Gly Leu Glu Ala Glu Asp Trp Ala Gln Gly Val  
                     50                    55                    60

1255

Val Glu Ala Gly Gly Ser Phe Gly Ala Tyr Gly Ala Gln Glu Glu Ala  
 65 70 75 80  
 Gln Cys Pro Thr Leu His Phe Leu Glu Gly Gly Glu Asp Ser Asp Ser  
 85 90 95  
 Asp Ser Glu Glu Glu Asp Asp Glu Glu Glu Asp Asp Glu Asp Glu Asp  
 100 105 110  
 Asp Asp Asp Asp Glu Glu Asp Gly Asp Glu Val Pro Val Pro Ser Phe  
 115 120 125  
 Gly Glu Ala Met Ala Tyr Phe Ala Met Val Lys Arg Tyr Leu Thr Ser  
 130 135 140  
 Phe Pro Ile Asp Asp Arg Val Gln Ser His Ile Leu His Leu Glu His  
 145 150 155 160  
 Asp Leu Val His Val Thr Arg Lys Asn His Ala Arg Gln Ala Gly Val  
 165 170 175  
 Arg Gly Leu Gly His Gln Ser  
 180

<210> 1231  
 <211> 59  
 <212> PRT  
 <213> Homo sapiens

<400> 1231  
 Asn Leu Tyr Lys Leu Lys Leu Asn His Glu Leu Gln Lys Lys Ser Ile  
 1 5 10 15  
 Leu Pro Lys Leu Asp Val Thr Thr Leu Thr Ser Leu Lys Tyr Glu Val  
 20 25 30  
 Asp Cys Leu Lys Asp Ser Ala Tyr Ile Leu Val Cys Thr Phe Arg Asn  
 35 40 45  
 Ile Phe Leu Gly Lys Ser Thr Gln His Phe Leu  
 50 55

<210> 1232  
 <211> 135  
 <212> PRT  
 <213> Homo sapiens

1256

&lt;400&gt; 1232

Gly Ser Thr His Ala Ser Gly Pro Pro Gln Ala Pro Gln Leu Ile Tyr  
 1 5 10 15  
 Gln Glu Tyr Val Asn Gln Pro Asp Val Arg Pro Gln Pro Pro Ser Pro  
 20 25 30  
 Arg Glu Gly Pro Leu Pro Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu  
 35 40 45  
 Arg Ala Lys Thr Leu Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val  
 50 55 60  
 Phe Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln  
 65 70 75 80  
 Gly Gly Ala Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala  
 85 90 95  
 Phe Asp Asn Leu Tyr Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala  
 100 105 110  
 Pro Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr  
 115 120 125  
 Leu Gly Leu Asp Val Pro Val  
 130 135

&lt;210&gt; 1233

&lt;211&gt; 134

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1233

Arg Gly Glu Thr Arg Glu Met Ala Gly Asn Leu Leu Ser Gly Ala Gly  
 1 5 10 15  
 Arg Arg Leu Trp Asp Trp Val Pro Leu Ala Cys Arg Ser Phe Ser Leu  
 20 25 30  
 Gly Val Pro Arg Leu Ile Gly Ile Arg Leu Thr Leu Pro Pro Pro Lys  
 35 40 45  
 Val Val Asp Arg Trp Asn Glu Lys Arg Ala Met Phe Gly Val Tyr Asp  
 50 55 60  
 Asn Ile Gly Ile Leu Gly Asn Phe Glu Lys His Pro Lys Glu Leu Ile  
 65 70 75 80

1257

[illegible]

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<210> 1234
<211> 282
<212> PRT
<213> Homo sapiens
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<220>  
<221> SITE  
<222> (8)  
<223> Xaa equals any of the naturally occurring L-amino acids
```

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<220>
<221> SITE
<222> (18)
<223> Xaa equals any of the naturally occurring L-amino acids
```

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<400> 1234
Thr Gly Pro Glu Phe Pro Gly Xaa Pro Thr Arg Pro Arg Thr Ala Ala
  1                      5                      10                      15

Ala Xaa Ser Ala Arg Thr Arg Thr Arg Gly Ser Pro Arg Met Gly Glu
                20                      25                      30

Phe Asn Glu Lys Lys Thr Thr Cys Gly Thr Val Cys Leu Lys Tyr Leu
        35                      40                      45

Leu Phe Thr Tyr Asn Cys Cys Phe Trp Leu Ala Gly Leu Ala Val Met
        50                      55                      60

Ala Val Gly Ile Trp Thr Leu Ala Leu Lys Ser Asp Tyr Ile Ser Leu
  65                      70                      75                      80

Leu Ala Ser Gly Thr Tyr Leu Ala Thr Ala Tyr Ile Leu Val Val Ala
                85                      90                      95

Gly Thr Val Val Met Val Thr Gly Val Leu Gly Cys Cys Ala Thr Phe
        100                      105                      110

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1258

Lys Glu Arg Arg Asn Leu Leu Arg Leu Tyr Phe Ile Leu Leu Leu Ile  
 115 120 125

Ile Phe Leu Leu Glu Ile Ile Ala Gly Ile Leu Ala Tyr Ala Tyr Tyr  
 130 135 140

Gln Gln Leu Asn Thr Glu Leu Lys Glu Asn Leu Lys Asp Thr Met Thr  
 145 150 155 160

Lys Arg Tyr His Gln Pro Gly His Glu Ala Val Thr Ser Ala Val Asp  
 165 170 175

Gln Leu Gln Gln Glu Phe His Cys Cys Gly Ser Asn Asn Ser Gln Asp  
 180 185 190

Trp Arg Asp Ser Glu Trp Ile Arg Ser Gln Glu Ala Gly Gly Arg Val  
 195 200 205

Val Pro Asp Ser Cys Cys Lys Thr Val Val Ala Leu Cys Gly Gln Arg  
 210 215 220

Asp His Ala Ser Asn Ile Tyr Lys Val Glu Gly Gly Cys Ile Thr Lys  
 225 230 235 240

Leu Glu Thr Phe Ile Gln Glu His Leu Arg Val Ile Gly Ala Val Gly  
 245 250 255

Ile Gly Ile Ala Cys Val Gln Val Phe Gly Met Ile Phe Thr Cys Cys  
 260 265 270

Leu Tyr Arg Ser Leu Lys Leu Glu His Tyr  
 275 280

&lt;210&gt; 1235

&lt;211&gt; 66

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1235

Ala Glu Ile Gln Val Phe Gln Val Gly Leu Val Ser Trp Gly Leu Tyr  
 1 5 10 15

Asn Pro Cys Leu Gly Ser Ala Asp Lys Asn Ser Arg Lys Arg Ala Pro  
 20 25 30

Arg Ser Lys Val Pro Pro Pro Arg Asp Phe His Ile Asn Leu Phe Arg  
 35 40 45

1259

Met Gln Pro Trp Leu Arg Gln His Leu Gly Asp Val Leu Asn Phe Leu  
 50 55 60

Pro Leu  
 65

<210> 1236

<211> 108

<212> PRT

<213> Homo sapiens

<400> 1236

Ala Arg Arg Arg Arg Gly Gly Trp Ala Gly Gly Gly Gly Thr Arg  
 1 5 10 15

Arg Ala Leu Gly Val Pro Val Ala Arg Arg Arg Arg Met Trp Arg Ala  
 20 25 30

Glu Gly Lys Trp Leu Pro Lys Thr Ser Arg Lys Ser Val Ser Gln Ser  
 35 40 45

Val Phe Cys Gly Thr Ser Thr Tyr Cys Val Leu Asn Thr Val Pro Pro  
 50 55 60

Ile Glu Asp Asp His Gly Asn Ser Asn Ser Ser His Val Lys Ile Phe  
 65 70 75 80

Leu Pro Lys Lys Leu Leu Glu Cys Leu Pro Lys Cys Ser Ser Leu Pro  
 85 90 95

Lys Glu Arg His Arg Trp Asn Thr Asn Glu Arg Ser  
 100 105

<210> 1237

<211> 116

<212> PRT

<213> Homo sapiens

<400> 1237

Arg Gly Gly Gly Ser Lys Gly Asn Glu Val Arg Pro Val Ala Gly Ser  
 1 5 10 15

Ala Glu Ser Ala Ala Leu Arg Leu Arg Ala Pro Leu Gln Gln Val Gln  
 20 25 30

Ala Gln Leu Ser Pro Leu Gln Asn Ile Ser Pro Trp Ile Leu Ala Val  
 35 40 45

1260

Leu Thr Leu Gln Ile Gln Ser Leu Ile Ser Cys Trp Ala Phe Trp Thr  
     50                    55                    60  
 Thr Trp Thr Gln Ser Cys Ser Ser Asn Ala Leu Pro Gln Ser Leu Pro  
     65                    70                    75                    80  
 Ala Trp Arg Ser Ser Gln Arg Ser Thr Gln Lys Asp Pro Val Pro Tyr  
                     85                    90                    95  
 Gln Pro Pro Phe Leu Cys Gln Trp Gly Arg His Gln Pro Ser Trp Lys  
                     100                    105                    110  
 Pro Leu Met Asn  
             115

&lt;210&gt; 1238

&lt;211&gt; 311

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1238

Val Thr Ser Glu Gly Val Arg Val Arg Ser Ser Arg Gly Arg Ala Xaa  
     1                    5                    10                    15

Gly Val Trp Arg Phe Glu Arg Asp Glu Asp Gly Thr Gly Ala Gly Cys  
             20                    25                    30

Gly Gln Trp Thr Arg Phe Cys Arg Glu Pro Lys Met Ala Val Asn Val  
             35                    40                    45

Tyr Ser Thr Ser Val Thr Ser Asp Asn Leu Ser Arg His Asp Met Leu  
     50                    55                    60

Ala Trp Ile Asn Glu Ser Leu Gln Leu Asn Leu Thr Lys Ile Glu Gln  
     65                    70                    75                    80

Leu Cys Ser Gly Ala Ala Tyr Cys Gln Phe Met Asp Met Leu Phe Pro  
             85                    90                    95

Gly Ser Ile Ala Leu Lys Lys Val Lys Phe Gln Ala Lys Leu Glu His  
             100                    105                    110

Glu Tyr Ile Gln Asn Phe Lys Ile Leu Gln Ala Gly Phe Lys Arg Met

1261

115	120	125
Gly Val Asp Lys Ile Ile Pro Val Asp Lys Leu Val Lys Gly Lys Phe		
130	135	140
Gln Asp Asn Phe Glu Phe Val Gln Trp Phe Lys Lys Phe Phe Asp Ala		
145	150	155
Asn Tyr Asp Gly Lys Asp Tyr Asp Pro Val Ala Ala Arg Gln Gly Gln		
165	170	175
Glu Thr Ala Val Ala Pro Ser Leu Val Ala Pro Ala Leu Asn Lys Pro		
180	185	190
Lys Lys Pro Leu Thr Ser Ser Ser Ala Ala Pro Gln Arg Pro Ile Ser		
195	200	205
Thr Gln Arg Thr Ala Ala Ala Pro Lys Ala Gly Pro Gly Val Val Arg		
210	215	220
Lys Asn Pro Gly Val Gly Asn Gly Asp Asp Glu Ala Ala Glu Leu Met		
225	230	235
Gln Gln Val Asn Val Leu Lys Leu Thr Val Glu Asp Leu Glu Lys Glu		
245	250	255
Arg Asp Phe Tyr Phe Gly Lys Leu Arg Asn Ile Glu Leu Ile Cys Gln		
260	265	270
Glu Asn Glu Gly Glu Asn Asp Pro Val Leu Gln Arg Ile Val Asp Ile		
275	280	285
Leu Tyr Ala Thr Asp Glu Gly Phe Val Ile Pro Asp Glu Gly Gly Pro		
290	295	300
Gln Glu Glu Gln Glu Glu Tyr		
305	310	

&lt;210&gt; 1239

&lt;211&gt; 345

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1239

Ala Ala Arg Leu Ala Val Glu Met Lys Thr Asp Leu Leu Ile Val Leu
1 5 10 15

Ser Asp Val Glu Gly Leu Phe Asp Ser Pro Pro Gly Ser Asp Asp Ala
20 25 30

1262

Lys Leu Ile Asp Ile Phe Tyr Pro Gly Asp Gln Gln Ser Val Thr Phe  
 35 40 45

Gly Thr Lys Ser Arg Val Gly Met Gly Gly Met Glu Ala Lys Val Lys  
 50 55 60

Ala Ala Leu Trp Ala Leu Gln Gly Gly Thr Ser Val Val Ile Ala Asn  
 65 70 75 80

Gly Thr His Pro Lys Val Ser Gly His Val Ile Thr Asp Ile Val Glu  
 85 90 95

Gly Lys Lys Val Gly Thr Phe Phe Ser Glu Val Lys Pro Ala Gly Pro  
 100 105 110

Thr Val Glu Gln Gln Gly Glu Met Ala Arg Ser Gly Gly Arg Met Leu  
 115 120 125

Ala Thr Leu Glu Pro Glu Gln Arg Ala Glu Ile Ile His His Leu Ala  
 130 135 140

Asp Leu Leu Thr Asp Gln Arg Asp Glu Ile Leu Leu Ala Asn Lys Lys  
 145 150 155 160

Asp Leu Glu Glu Ala Glu Gly Arg Leu Ala Ala Pro Leu Leu Lys Arg  
 165 170 175

Leu Ser Leu Ser Thr Ser Lys Leu Asn Ser Leu Ala Ile Gly Leu Arg  
 180 185 190

Gln Ile Ala Ala Ser Ser Gln Asp Ser Val Gly Arg Val Leu Arg Arg  
 195 200 205

Thr Arg Ile Ala Lys Asn Leu Glu Leu Glu Gln Val Thr Val Pro Ile  
 210 215 220

Gly Val Leu Leu Val Ile Phe Glu Ser Arg Pro Asp Cys Leu Pro Gln  
 225 230 235 240

Val Ala Ala Leu Ala Ile Ala Ser Gly Asn Gly Leu Leu Leu Lys Gly  
 245 250 255

Gly Lys Glu Ala Ala His Ser Asn Arg Ile Leu His Leu Leu Thr Gln  
 260 265 270

Glu Ala Leu Ser Ile His Gly Val Lys Glu Ala Val Gln Leu Val Asn  
 275 280 285

Thr Arg Glu Glu Val Glu Asp Leu Cys Arg Leu Asp Lys Met Ile Asp  
 290 295 300

1263

Leu Ile Ile Pro Arg Gly Ser Ser Gln Leu Val Arg Asp Ile Gln Lys  
 305 310 315 320

Ala Ala Lys Gly Ile Pro Val Met Gly His Ser Glu Gly Ile Cys Ala  
 325 330 335

His Val Cys Gly Phe Arg Gly Gln Cys  
 340 345

&lt;210&gt; 1240

&lt;211&gt; 87

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1240

Gly Tyr Cys Phe Ile Ser Thr Ser Arg Thr Pro Lys Glu Thr Ile Trp  
 1 5 10 15

Val Lys Ala Thr Ser Thr Ala Leu Ala Leu His Arg Phe Leu Glu Phe  
 20 25 30

Leu Ser Phe Thr Phe Ser Leu Thr Gln His Cys Leu Leu Phe Val Phe  
 35 40 45

Val Ala Trp Phe Val Phe Phe Leu Pro Cys Ser Pro Asn Leu Cys Pro  
 50 55 60

Asn Ser Phe Gly Leu Met Gln Lys Tyr Leu Cys Gly Arg Glu Glu Leu  
 65 70 75 80

Phe Ser Trp Arg Ala Phe Arg  
 85

&lt;210&gt; 1241

&lt;211&gt; 196

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1241

Arg Ala Gly Ser Pro Ala Ser Pro Ala His Val Ala Trp Pro Pro Ala  
 1 5 10 15

Pro Thr Trp Ser Arg Ala Leu Pro Arg Val Ala Pro Arg Ser Ser Ser  
 20 25 30

Arg Arg Gly Arg Arg Tyr Pro Glu Arg Ser Gln Arg Arg Arg Glu Val

1264

35	40	45
Ala Ala Thr Ala Met Pro Lys Asn Lys Gly Lys Gly Gly Lys Asn Arg		
50	55	60
Arg Arg Gly Lys Asn Glu Asn Glu Ser Glu Lys Arg Glu Leu Val Phe		
65	70	75 80
Lys Glu Asp Gly Gln Glu Tyr Ala Gln Val Ile Lys Met Leu Gly Asn		
	85	90 95
Gly Arg Leu Glu Ala Met Cys Phe Asp Gly Val Lys Arg Leu Cys His		
	100	105 110
Ile Arg Gly Lys Leu Arg Lys Lys Val Trp Ile Asn Thr Ser Asp Ile		
	115	120 125
Ile Leu Val Gly Leu Arg Asp Tyr Gln Asp Asn Lys Ala Asp Val Ile		
	130	135 140
Leu Lys Tyr Asn Ala Asp Glu Ala Arg Ser Leu Lys Ala Tyr Gly Glu		
145	150	155 160
Leu Pro Glu His Ala Lys Ile Asn Glu Thr Asp Thr Phe Gly Pro Gly		
	165	170 175
Asp Asp Asp Glu Ile Gln Phe Asp Asp Ile Gly Asp Asp Asp Glu Asp		
	180	185 190
Ile Asp Asp Ile		
	195	

&lt;210&gt; 1242

&lt;211&gt; 218

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1242

Ala Val Xaa Phe Lys Asp Xaa Ile Tyr Glu Ile Phe Gln Lys Leu Asn

1265

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1           5           10           15
Thr Ser Ile Gln Val Val Leu Leu Ser Ala Thr Met Pro Thr Asp Val
      20           25           30
Leu Glu Val Thr Lys Lys Phe Met Arg Asp Pro Ile Arg Ile Leu Val
      35           40           45
Lys Lys Glu Glu Leu Thr Leu Glu Gly Ile Lys Gln Phe Tyr Ile Asn
      50           55           60
Val Glu Arg Glu Glu Trp Lys Leu Asp Thr Leu Cys Asp Leu Tyr Glu
      65           70           75           80
Thr Leu Thr Ile Thr Gln Ala Val Ile Phe Leu Asn Thr Arg Arg Lys
      85           90           95
Val Asp Trp Leu Thr Glu Lys Met His Ala Arg Asp Phe Thr Val Ser
      100          105          110
Ala Leu His Gly Asp Met Asp Gln Lys Glu Arg Asp Val Ile Met Arg
      115          120          125
Glu Phe Arg Ser Gly Ser Ser Arg Val Leu Ile Thr Thr Asp Leu Leu
      130          135          140
Ala Arg Gly Ile Asp Val Gln Gln Val Ser Leu Val Ile Asn Tyr Asp
      145          150          155          160
Leu Pro Thr Asn Arg Glu Asn Tyr Ile His Arg Ile Gly Arg Gly Gly
      165          170          175
Arg Phe Gly Arg Lys Gly Val Ala Ile Asn Phe Val Thr Glu Glu Asp
      180          185          190
Lys Arg Ile Leu Arg Asp Ile Glu Thr Phe Tyr Asn Thr Thr Val Glu
      195          200          205
Glu Met Pro Met Asn Val Ala Asp Leu Ile
      210          215

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&lt;210&gt; 1243

&lt;211&gt; 173

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1243

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Leu Asp Gly Ser Ala Arg Ala Glu Leu Ala Leu Ser Val Ala Val Asn
1           5           10           15

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1266

Val Ala Pro Gly Arg Leu Cys Ala Gly Arg Tyr Ser Ser Asp Val Gln  
                   20                  25                  30

Glu Met Ile Leu Ser Ser Ala Thr Ala Asp Arg Ile Pro Ile Ala Val  
           35                  40                  45

Ser Gly Val Arg Gly Met Gly Phe Leu Met Arg His His Ile Glu Thr  
           50                  55                  60

Gly Gly Gly Gln Leu Pro Ala Lys Leu Ser Ser Leu Phe Val Lys Cys  
       65                  70                  75                  80

Leu Gln Asn Pro Ser Ser Asp Ile Arg Leu Val Ala Glu Lys Met Ile  
                   85                  90                  95

Trp Trp Ala Asn Lys Asp Pro Leu Pro Pro Leu Asp Pro Gln Ala Ile  
           100                  105                  110

Lys Pro Ile Leu Lys Ala Leu Leu Asp Asn Thr Lys Asp Lys Asn Thr  
           115                  120                  125

Val Val Arg Ala Tyr Ser Asp Gln Ala Ile Val Asn Leu Leu Lys Met  
       130                  135                  140

Arg Gln Gly Glu Glu Val Phe Gln Ser Leu Ser Lys Ile Leu Asp Val  
       145                  150                  155                  160

Ala Ser Leu Glu Val Leu Asn Glu Val Asn Arg Ser Pro  
                   165                  170

&lt;210&gt; 1244

&lt;211&gt; 222

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1244

Tyr Ile Lys Ile Tyr Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met  
       1                  5                  10                  15

1267

Xaa Gln Ala Thr Ala Glu Ala Asn Asn Leu Ala Ala Val Ala Thr Ala  
                   20                                  25                                  30  
 Lys Asp Thr Tyr Asn Lys Lys Met Glu Glu Ile Cys Gly Gly Asp Lys  
                   35                                  40                                  45  
 Pro Phe Leu Ala Pro Asn Asp Leu Gln Thr Lys His Leu Gln Leu Lys  
                   50                                  55                                  60  
 Glu Glu Ser Val Lys Leu Phe Xaa Gly Val Lys Lys Met Gly Gly Glu  
                   65                                  70                                  75                                  80  
 Glu Phe Ser Arg Arg Tyr Leu Gln Gln Leu Glu Ser Glu Ile Asp Glu  
                                   85                                  90                                  95  
 Leu Tyr Ile Gln Tyr Ile Lys His Asn Asp Ser Lys Asn Ile Phe His  
                   100                                  105                                  110  
 Ala Ala Arg Thr Pro Ala Thr Leu Phe Val Val Ile Phe Ile Thr Tyr  
                   115                                  120                                  125  
 Val Ile Ala Gly Val Thr Gly Phe Ile Gly Leu Asp Ile Ile Ala Ser  
                   130                                  135                                  140  
 Leu Cys Asn Met Ile Met Gly Leu Thr Leu Ile Thr Leu Cys Thr Trp  
                   145                                  150                                  155                                  160  
 Ala Tyr Ile Arg Tyr Ser Gly Glu Tyr Arg Glu Leu Gly Ala Val Ile  
                   165                                  170                                  175  
 Asp Gln Val Ala Ala Ala Leu Trp Asp Gln Ala Leu Tyr Lys Leu Tyr  
                   180                                  185                                  190  
 Ser Ala Ala Ala Thr His Arg His Leu Tyr His Gln Ala Phe Pro Thr  
                   195                                  200                                  205  
 Pro Lys Ser Glu Ser Thr Glu Gln Ser Glu Lys Lys Lys Met  
                   210                                  215                                  220

&lt;210&gt; 1245

&lt;211&gt; 278

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1245

Ser Ala Glu Asp Val Glu Phe Gln Lys Glu Val Ala Gln Val Arg Lys  
           1                                  5                                  10                                  15

1268

Arg Ile Thr Gln Arg Lys Lys Gln Glu Gln Leu Thr Pro Gly Val Val  
                   20                  25                  30

Tyr Val Arg His Leu Pro Asn Leu Leu Asp Glu Thr Gln Ile Phe Ser  
                   35                  40                  45

Tyr Phe Ser Gln Phe Gly Thr Val Thr Arg Phe Arg Leu Ser Arg Ser  
                   50                  55                  60

Lys Arg Thr Gly Asn Ser Lys Gly Tyr Ala Phe Val Glu Phe Glu Ser  
                   65                  70                  75                  80

Glu Asp Val Ala Lys Ile Val Ala Glu Thr Met Asn Asn Tyr Leu Phe  
                   85                  90                  95

Gly Glu Arg Leu Leu Glu Cys His Phe Met Pro Pro Glu Lys Val His  
                   100                  105                  110

Lys Glu Leu Phe Lys Asp Trp Asn Ile Pro Phe Lys Gln Pro Ser Tyr  
                   115                  120                  125

Pro Ser Val Lys Arg Tyr Asn Arg Asn Arg Thr Leu Thr Gln Lys Leu  
                   130                  135                  140

Arg Met Glu Glu Arg Phe Lys Lys Lys Glu Arg Leu Leu Arg Lys Lys  
                   145                  150                  155                  160

Leu Ala Lys Lys Gly Ile Asp Tyr Asp Phe Pro Ser Leu Ile Leu Gln  
                   165                  170                  175

Lys Thr Glu Ser Ile Ser Lys Thr Asn Arg Gln Thr Ser Thr Lys Gly  
                   180                  185                  190

Gln Val Leu Arg Lys Lys Lys Lys Lys Val Ser Gly Thr Leu Asp Thr  
                   195                  200                  205

Pro Glu Lys Thr Val Asp Ser Gln Gly Pro Thr Pro Val Cys Thr Pro  
                   210                  215                  220

Thr Phe Leu Glu Arg Arg Lys Ser Gln Val Ala Glu Leu Asn Asp Asp  
                   225                  230                  235                  240

Asp Lys Asp Asp Glu Ile Val Phe Lys Gln Pro Ile Ser Cys Val Lys  
                   245                  250                  255

Glu Glu Ile Gln Glu Thr Gln Thr Pro Thr His Ser Arg Lys Lys Arg  
                   260                  265                  270

Arg Arg Ser Ser Asn Gln  
                   275

1269

&lt;210&gt; 1246

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (100)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1246

Ser Pro Pro Pro Leu Ser Leu Ile Leu Leu Ser Pro Ile Lys Ala Lys  
 1 5 10 15

Tyr Gly Leu Thr Thr Ser Pro Lys Ser Val Leu Arg Pro Ser Leu Cys  
 20 25 30

Leu Cys Ala Leu Leu Gly Val Ser Gln Arg Ser Gly Gln Asp Cys Ala  
 35 40 45

Gly Pro Ala Ser Pro Cys Ala Ser Gln Glu His Arg Gln Gly Val Leu  
 50 55 60

Val Ala Val Ala Gly His Leu Ser Pro Ser Ser Leu Leu Asn Val Leu  
 65 70 75 80

Thr Ala Arg Gly Asn Gly Val Ser Phe Pro Thr Lys Lys Pro Leu Leu  
 85 90 95

Tyr Ile Phe Xaa Leu Gln Ser His Arg Leu Gln Thr Thr Leu Leu Phe  
 100 105 110

Phe Met Asp Phe Ser Ala His Phe Arg  
 115 120

&lt;210&gt; 1247

&lt;211&gt; 36

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1247

Ile Phe His Arg Val Leu Leu Cys Asp Leu Asn Phe Ser Leu Gly Pro  
 1 5 10 15

Ala Ser Asp Ile Val Gly Gly Leu Ser Trp Phe Gln Glu Ile Arg Leu  
 20 25 30

1270

Ala Phe Ser Ser

35

&lt;210&gt; 1248

&lt;211&gt; 184

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1248

Trp Ile Pro Arg Ala Cys Arg Glu Phe Gly Thr Arg Phe Gly Gly Val  
 1 5 10 15

Thr Arg Gly Phe Asn Met Arg Ile Glu Lys Cys Tyr Phe Cys Ser Gly  
 20 25 30

Pro Ile Tyr Pro Gly His Gly Met Met Phe Val Arg Asn Asp Cys Lys  
 35 40 45

Val Phe Arg Phe Cys Lys Ser Lys Cys His Lys Asn Phe Lys Lys Lys  
 50 55 60

Arg Asn Pro Arg Lys Val Arg Trp Thr Lys Ala Phe Arg Lys Ala Ala  
 65 70 75 80

Gly Lys Glu Leu Thr Val Asp Asn Ser Phe Glu Phe Glu Lys Arg Arg  
 85 90 95

Asn Glu Pro Ile Lys Tyr Gln Arg Glu Leu Trp Asn Lys Thr Ile Asp  
 100 105 110

Ala Met Lys Arg Val Glu Glu Ile Lys Gln Lys Arg Gln Ala Lys Phe  
 115 120 125

Ile Met Asn Arg Leu Lys Lys Asn Lys Glu Leu Gln Lys Val Gln Asp  
 130 135 140

Ile Lys Glu Val Lys Gln Asn Ile His Leu Ile Arg Ala Pro Leu Ala  
 145 150 155 160

Gly Lys Gly Lys Gln Leu Glu Glu Lys Met Val Gln Gln Leu Gln Glu  
 165 170 175

Asp Val Asp Met Glu Asp Ala Pro  
 180

&lt;210&gt; 1249

&lt;211&gt; 188

1271

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1249

Gly Cys Pro Ala His Ser Pro Gly Ser Ala Lys Arg Trp Thr Gln Ala  
 1 5 10 15

Ala Met Ser Arg Pro Arg Met Arg Leu Val Val Thr Ala Asp Asp Phe  
 20 25 30

Gly Tyr Cys Pro Arg Arg Asp Glu Gly Ile Val Glu Ala Phe Leu Ala  
 35 40 45

Gly Ala Val Thr Ser Val Ser Leu Leu Val Asn Gly Ala Ala Thr Glu  
 50 55 60

Ser Ala Ala Glu Leu Ala Arg Arg His Ser Ile Pro Thr Gly Leu His  
 65 70 75 80

Ala Asn Leu Ser Glu Gly Arg Pro Val Gly Pro Ala Arg Arg Gly Ala  
 85 90 95

Ser Ser Leu Leu Gly Pro Glu Xaa Phe Phe Leu Gly Lys Met Gly Phe  
 100 105 110

Arg Glu Ala Val Ala Ala Gly Asp Val Asp Leu Pro Gln Val Arg Ser  
 115 120 125

Arg Ser Tyr Arg Arg Met Leu Ala Arg Thr Pro Arg Ala Pro Pro Gly  
 130 135 140

Gly Thr Val Arg Pro Leu Glu Leu Ala Val Asp Asp Phe Arg Ile Gln  
 145 150 155 160

Thr Leu Glu Pro Ser His Gly Ser Thr Arg Arg Val Ser Ser Ala Ala  
 165 170 175

Thr Pro Gly Arg Ser Arg Cys Leu Ser Leu Ala Leu  
 180 185

&lt;210&gt; 1250

&lt;211&gt; 201

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1272

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (96)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (97)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1250

Arg	Lys	Asn	Leu	Glu	Ile	Tyr	Glu	Ala	Val	Thr	Ser	Pro	Gln	Gly	Pro
1			5						10					15	

Ala	Met	Thr	Trp	Ser	Met	Phe	Ala	Val	Gly	Trp	Met	Glu	Leu	Lys	Asp
		20						25					30		

Ala	Cys	Gly	Xaa	Arg	Gly	Leu	Leu	Asp	Arg	Ser	Phe	Ala	Asn	Met	Ala
		35				40						45			

Glu	Pro	Phe	Lys	Val	Trp	Thr	Glu	Asn	Ala	Asp	Gly	Ser	Gly	Ala	Val
	50					55					60				

Asn	Phe	Leu	Thr	Gly	Met	Gly	Gly	Phe	Leu	Gln	Ala	Val	Val	Phe	Gly
65					70				75					80	

Cys	Thr	Gly	Phe	Arg	Val	Ser	Val	Ser	Gly	Ile	Phe	Tyr	Gln	Gly	Xaa
				85					90					95	

Xaa	Leu	Asn	Phe	Xaa	Phe	Ser	Glu	Asp	Ser	Val	Thr	Val	Glu	Val	Thr
		100						105					110		

Ala	Arg	Ala	Gly	Pro	Trp	Ala	Pro	His	Leu	Glu	Ala	Glu	Leu	Trp	Pro
		115					120					125			

Ser	Gln	Ser	Arg	Leu	Ser	Leu	Leu	Pro	Gly	His	Lys	Val	Ser	Phe	Pro
	130					135					140				

Arg	Ser	Ala	Gly	Arg	Ile	Gln	Met	Ser	Pro	Pro	Lys	Leu	Pro	Gly	Ser
145					150					155				160	

1273

Ser Ser Ser Glu Phe Pro Gly Arg Thr Phe Ser Asp Val Arg Asp Pro  
                   165                  170                  175

Leu Gln Ser Pro Leu Trp Val Thr Leu Gly Ser Ser Ser Pro Thr Glu  
                   180                  185                  190

Ser Leu Thr Val Asp Pro Ala Ser Glu  
                   195                  200

&lt;210&gt; 1251

&lt;211&gt; 266

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1251

Ser Val Gly Ser Val Ala Ala Ala Thr Arg Thr Gly Pro Val Ser Xaa  
   1                  5                  10                  15

Lys Lys Phe Arg Glu Ala Ser Trp Arg Phe Thr Phe Tyr Leu Ile Ala  
                   20                  25                  30

Phe Ile Ala Gly Met Ala Val Ile Val Asp Lys Pro Trp Phe Tyr Asp  
                   35                  40                  45

Met Lys Lys Val Trp Glu Gly Tyr Pro Ile Gln Ser Thr Ile Pro Ser  
                   50                  55                  60

Gln Tyr Trp Tyr Tyr Met Ile Glu Leu Ser Phe Tyr Trp Ser Leu Leu  
   65                  70                  75                  80

Phe Ser Ile Ala Ser Asp Val Lys Arg Lys Asp Phe Lys Glu Gln Ile  
                   85                  90                  95

Ile His His Val Ala Thr Ile Ile Leu Ile Ser Phe Ser Trp Phe Ala  
                   100                  105                  110

Asn Tyr Ile Arg Ala Gly Thr Leu Ile Met Ala Leu His Asp Ser Ser  
                   115                  120                  125

Asp Tyr Leu Leu Glu Ser Ala Lys Met Phe Asn Tyr Ala Gly Trp Lys  
                   130                  135                  140

Asn Thr Cys Asn Asn Ile Phe Ile Val Phe Ala Ile Val Phe Ile Ile



1274

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145              150              155              160
Thr Arg Leu Val Ile Leu Pro Phe Trp Ile Leu His Cys Thr Leu Val
              165              170              175
Tyr Pro Leu Glu Leu Tyr Pro Ala Phe Phe Gly Tyr Tyr Phe Phe Asn
              180              185              190
Ser Met Met Gly Val Leu Gln Leu Leu His Ile Phe Trp Ala Tyr Leu
              195              200              205
Ile Leu Arg Met Ala His Lys Phe Ile Thr Gly Lys Leu Val Glu Asp
              210              215              220
Glu Arg Ser Asp Arg Glu Glu Thr Glu Ser Ser Glu Gly Glu Glu Ala
225              230              235              240
Ala Ala Gly Gly Gly Ala Lys Ser Arg Pro Leu Ala Asn Gly His Pro
              245              250              255
Ile Leu Asn Asn Asn His Arg Lys Asn Asp
              260              265

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&lt;210&gt; 1252

&lt;211&gt; 163

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1252

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Lys Met Gly Thr Asn Lys Cys Ala Ser Gln Ala Gly Met Thr Ala Tyr
  1              5              10              15
Gly Thr Arg Arg His Leu Tyr Asp Pro Lys Met Gln Thr Asp Lys Pro
              20              25              30
Phe Asp Gln Thr Thr Ile Ser Leu Gln Met Gly Thr Asn Lys Gly Ala
              35              40              45
Ser Gln Ala Gly Met Leu Ala Pro Gly Thr Arg Arg Asp Ile Tyr Asp
              50              55              60
Gln Lys Leu Thr Leu Gln Pro Val Asp Asn Ser Thr Ile Ser Leu Gln
              65              70              75              80
Met Gly Thr Asn Lys Val Ala Ser Gln Lys Gly Met Ser Val Tyr Gly
              85              90              95
Leu Gly Arg Gln Val Tyr Asp Pro Lys Tyr Cys Ala Ala Pro Thr Glu
              100              105              110

```

1275

Pro Val Ile His Asn Gly Ser Gln Gly Thr Gly Thr Asn Gly Ser Glu  
 115 120 125

Ile Ser Asp Ser Asp Tyr Gln Ala Glu Tyr Pro Asp Glu Tyr His Gly  
 130 135 140

Glu Tyr Gln Asp Asp Tyr Pro Arg Asp Tyr Gln Tyr Ser Asp Gln Gly  
 145 150 155 160

Ile Asp Tyr

&lt;210&gt; 1253

&lt;211&gt; 298

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (109)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1253

Leu Glu Glu Thr Pro Cys Leu Arg Thr Ala Val Ala Cys Glu Gln Arg  
 1 5 10 15

Asp Pro Gly Thr Glu Ser Gln Pro Arg Arg Cys Cys Arg Arg Arg Arg  
 20 25 30

Pro Glu Thr Ala Glu Pro Val Arg Pro Pro Pro Pro Pro Thr Pro Asp  
 35 40 45

Thr Glu His Pro Val Met Asp Lys Asn Glu Leu Val Gln Lys Ala Lys  
 50 55 60

Leu Ala Glu Gln Ala Glu Arg Tyr Asp Asp Met Ala Ala Cys Met Lys  
 65 70 75 80

Ser Val Thr Glu Gln Gly Ala Glu Leu Ser Asn Glu Glu Arg Asn Leu  
 85 90 95

Leu Ser Val Ala Tyr Lys Asn Val Val Gly Ala Arg Xaa Ser Ser Trp  
 100 105 110

Arg Val Val Ser Ser Ile Glu Gln Lys Thr Glu Gly Ala Glu Lys Lys  
 115 120 125

Gln Gln Met Ala Arg Glu Tyr Arg Glu Lys Ile Glu Thr Glu Leu Arg

1276

130                      135                      140  
 Asp Ile Cys Asn Asp Val Leu Ser Leu Leu Glu Lys Phe Leu Ile Pro  
 145                      150                      155                      160  
 Asn Ala Ser Gln Ala Glu Ser Lys Val Phe Tyr Leu Lys Met Lys Gly  
                     165                      170                      175  
 Asp Tyr Tyr Arg Tyr Leu Ala Glu Val Ala Ala Gly Asp Asp Lys Lys  
                     180                      185                      190  
 Gly Ile Val Asp Gln Ser Gln Gln Ala Tyr Gln Glu Ala Phe Glu Ile  
                     195                      200                      205  
 Ser Lys Lys Glu Met Gln Pro Thr His Pro Ile Arg Leu Gly Leu Ala  
                     210                      215                      220  
 Leu Asn Phe Ser Val Phe Tyr Tyr Glu Ile Leu Asn Ser Pro Glu Lys  
 225                      230                      235                      240  
 Ala Cys Ser Leu Ala Lys Thr Ala Phe Asp Glu Ala Ile Ala Glu Leu  
                     245                      250                      255  
 Asp Thr Leu Ser Glu Glu Ser Tyr Lys Asp Ser Thr Leu Ile Met Gln  
                     260                      265                      270  
 Leu Leu Arg Asp Asn Leu Thr Leu Trp Thr Ser Asp Thr Gln Gly Asp  
                     275                      280                      285  
 Glu Ala Glu Ala Gly Glu Gly Gly Glu Asn  
                     290                      295

&lt;210&gt; 1254

&lt;211&gt; 173

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1254

Ser Pro Ala Arg Pro Leu Ile Arg Ser Asp Lys Met Lys Glu Thr Ile  
   1                    5                    10                    15  
 Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala Gln Val Arg Ile Gly  
                     20                    25                    30  
 Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val Val His Arg Thr Ala  
                     35                    40                    45  
 Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu Lys Lys Leu Gly Val  
                     50                    55                    60

1277

Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met Phe Thr Asn Gln Gly  
 65 70 75 80  
 Thr Val Ile His Phe Asn Asn Pro Lys Val Gln Ala Ser Leu Ala Ala  
 85 90 95  
 Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr Lys Gln Leu Thr Glu  
 100 105 110  
 Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala Asp Ser Leu Thr Ser  
 115 120 125  
 Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln Ser Val Asp Gly Lys  
 130 135 140  
 Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp Glu Val Pro Asp Leu  
 145 150 155 160  
 Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu Ala Asn  
 165 170

&lt;210&gt; 1255

&lt;211&gt; 66

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1255

Leu Cys Cys Pro Phe His Ile Lys Glu Leu Leu Thr Thr Lys Ala Ala  
 1 5 10 15  
 Pro Ala Phe Pro Ile Cys Leu Ser Ile Trp Leu Ala Gly Lys Glu Arg  
 20 25 30  
 Thr Cys Met Leu Val Lys Glu Glu Val Gly Trp Lys Lys Trp Gly Gly  
 35 40 45  
 Thr Thr Val Lys Ser Arg Val Lys Pro Ser Trp Pro Lys Val Ser Cys  
 50 55 60  
 Arg Leu  
 65

&lt;210&gt; 1256

&lt;211&gt; 389

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1278

&lt;400&gt; 1256

Ala	Glu	Ala	Gly	Pro	Gly	Ala	Arg	Ala	Ala	Ala	Ala	Met	Ala	Ile	Lys
1				5				10						15	
Phe	Leu	Glu	Val	Ile	Lys	Pro	Phe	Cys	Val	Ile	Leu	Pro	Glu	Ile	Gln
			20					25					30		
Lys	Pro	Glu	Arg	Lys	Ile	Gln	Phe	Lys	Glu	Lys	Val	Leu	Trp	Thr	Ala
		35					40					45			
Ile	Thr	Leu	Phe	Ile	Phe	Leu	Val	Cys	Cys	Gln	Ile	Pro	Leu	Phe	Gly
	50					55					60				
Ile	Met	Ser	Ser	Asp	Ser	Ala	Asp	Pro	Phe	Tyr	Trp	Met	Arg	Val	Ile
65					70					75				80	
Leu	Ala	Ser	Asn	Arg	Gly	Thr	Leu	Met	Glu	Leu	Gly	Ile	Ser	Pro	Ile
				85					90					95	
Val	Thr	Ser	Gly	Leu	Ile	Met	Gln	Leu	Leu	Ala	Gly	Ala	Lys	Ile	Ile
			100					105						110	
Glu	Val	Gly	Asp	Thr	Pro	Lys	Asp	Arg	Ala	Leu	Phe	Asn	Gly	Ala	Gln
		115					120						125		
Lys	Leu	Phe	Gly	Met	Ile	Ile	Thr	Ile	Gly	Gln	Ser	Ile	Val	Tyr	Val
	130						135					140			
Met	Thr	Gly	Met	Tyr	Gly	Asp	Pro	Ser	Glu	Met	Gly	Ala	Gly	Ile	Cys
145					150					155				160	
Leu	Leu	Ile	Thr	Ile	Gln	Leu	Phe	Val	Ala	Gly	Leu	Ile	Val	Leu	Leu
				165					170					175	
Leu	Asp	Glu	Leu	Leu	Gln	Lys	Gly	Tyr	Gly	Leu	Gly	Ser	Gly	Ile	Ser
		180						185					190		
Leu	Phe	Ile	Ala	Thr	Asn	Ile	Cys	Glu	Thr	Ile	Val	Trp	Lys	Ala	Phe
		195					200						205		
Ser	Pro	Thr	Thr	Val	Asn	Thr	Gly	Arg	Gly	Met	Glu	Phe	Glu	Gly	Ala
	210						215				220				
Ile	Ile	Ala	Leu	Phe	His	Leu	Leu	Ala	Thr	Arg	Thr	Asp	Lys	Val	Arg
225					230					235				240	
Ala	Leu	Arg	Glu	Ala	Phe	Tyr	Arg	Gln	Asn	Leu	Pro	Asn	Leu	Met	Asn
			245						250					255	
Leu	Ile	Ala	Thr	Ile	Phe	Val	Phe	Ala	Val	Val	Ile	Tyr	Phe	Gln	Gly

1279

260	265	270
Phe Arg Val Asp Leu Pro Ile Lys Ser Ala Arg Tyr Arg Gly Gln Tyr		
275	280	285
Asn Thr Tyr Pro Ile Lys Leu Phe Tyr Thr Ser Asn Ile Pro Ile Ile		
290	295	300
Leu Gln Ser Ala Leu Val Ser Asn Leu Tyr Val Ile Ser Gln Met Leu		
305	310	315
Ser Ala Arg Phe Ser Gly Asn Leu Leu Val Ser Leu Leu Gly Thr Trp		
325	330	335
Ser Asp Thr Ser Ser Gly Gly Pro Ala Arg Ala Tyr Pro Val Gly Gly		
340	345	350
Leu Cys Tyr Tyr Leu Ser Pro Pro Trp Ser Met Asn Ser Thr Gly Thr		
355	360	365
Ser Pro Gln Pro Arg Pro Leu Val Gly Cys Ala Ser Gly Pro Ser Arg		
370	375	380
Ser Trp Leu Thr Ser		
385		

&lt;210&gt; 1257

&lt;211&gt; 191

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1257

Gly Xaa Pro Ser Ser Ser Arg Ala His Ser Pro Met Ile Ala Val Gly		
1	5	10
Ser Asp Asp Ser Ser Pro Asn Ala Met Ala Lys Val Gln Ile Phe Glu		
20	25	30
Tyr Asn Glu Asn Thr Arg Lys Tyr Ala Lys Ala Glu Thr Leu Met Thr		
35	40	45
Val Thr Asp Pro Val His Asp Ile Ala Phe Ala Pro Asn Leu Gly Arg		
50	55	60

1280

Ser Phe His Ile Leu Ala Ile Ala Thr Lys Asp Val Arg Ile Phe Thr  
 65 70 75 80  
 Leu Lys Pro Val Arg Lys Glu Leu Thr Ser Ser Gly Gly Pro Thr Lys  
 85 90 95  
 Phe Glu Ile His Ile Val Ala Gln Phe Asp Asn His Asn Ser Gln Val  
 100 105 110  
 Trp Arg Val Ser Trp Asn Ile Thr Gly Thr Val Leu Ala Ser Ser Gly  
 115 120 125  
 Asp Asp Gly Cys Val Arg Leu Trp Lys Ala Asn Tyr Met Asp Asn Trp  
 130 135 140  
 Lys Cys Thr Gly Ile Leu Lys Gly Asn Gly Ser Pro Val Asn Gly Ser  
 145 150 155 160  
 Ser Gln Gln Gly Thr Ser Asn Pro Ser Leu Gly Ser Asn Ile Pro Ser  
 165 170 175  
 Leu Gln Asn Ser Leu Asn Gly Ser Ser Ala Gly Arg Lys His Ser  
 180 185 190

&lt;210&gt; 1258

&lt;211&gt; 458

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1258

Pro Gly Ala Arg His Gly Ser Ala Ser Ala Pro Thr Leu Phe Pro Leu  
 1 5 10 15  
 Val Ser Cys Glu Asn Ser Pro Ser Asp Thr Ser Ser Val Ala Val Gly  
 20 25 30  
 Cys Leu Ala Gln Asp Phe Leu Pro Asp Ser Ile Thr Phe Ser Trp Lys  
 35 40 45  
 Tyr Lys Asn Asn Ser Asp Ile Ser Ser Thr Arg Gly Phe Pro Ser Val  
 50 55 60  
 Leu Arg Gly Gly Lys Tyr Ala Ala Thr Ser Gln Val Leu Leu Pro Ser  
 65 70 75 80  
 Lys Asp Val Met Gln Gly Thr Asp Glu His Val Val Cys Lys Val Gln  
 85 90 95  
 His Pro Asn Gly Asn Lys Glu Lys Asn Val Pro Leu Pro Val Ile Ala

1281

100	105	110
Glu Leu Pro Pro Lys Val Ser Val Phe Val Pro Pro Arg Asp Gly Phe		
115	120	125
Phe Gly Asn Pro Arg Lys Ser Lys Leu Ile Cys Gln Ala Thr Gly Phe		
130	135	140
Ser Pro Arg Gln Ile Gln Val Ser Trp Leu Arg Glu Gly Lys Gln Val		
145	150	155
Gly Ser Gly Val Thr Thr Asp Gln Val Gln Ala Glu Ala Lys Glu Ser		
165	170	175
Gly Pro Thr Thr Tyr Lys Val Thr Ser Thr Leu Thr Ile Lys Glu Ser		
180	185	190
Asp Trp Leu Ser Gln Ser Met Phe Thr Cys Arg Val Asp His Arg Gly		
195	200	205
Leu Thr Phe Gln Gln Asn Ala Ser Ser Met Cys Val Pro Asp Gln Asp		
210	215	220
Thr Ala Ile Arg Val Phe Ala Ile Pro Pro Ser Phe Ala Ser Ile Phe		
225	230	235
Leu Thr Lys Ser Thr Lys Leu Thr Cys Leu Val Thr Asp Leu Thr Thr		
245	250	255
Tyr Asp Ser Val Thr Ile Ser Trp Thr Arg Gln Asn Gly Glu Ala Val		
260	265	270
Lys Thr His Thr Asn Ile Ser Glu Ser His Pro Asn Ala Thr Phe Ser		
275	280	285
Ala Val Gly Glu Ala Ser Ile Cys Glu Asp Asp Trp Asn Ser Gly Glu		
290	295	300
Arg Phe Thr Cys Thr Val Thr His Thr Asp Leu Pro Ser Pro Leu Lys		
305	310	315
Gln Thr Ile Ser Arg Pro Lys Gly Val Ala Leu His Arg Pro Asp Val		
325	330	335
Tyr Leu Leu Pro Pro Ala Arg Glu Gln Leu Asn Leu Arg Glu Ser Ala		
340	345	350
Thr Ile Thr Cys Leu Val Thr Gly Phe Ser Pro Ala Asp Val Phe Val		
355	360	365
Gln Trp Met Gln Arg Gly Gln Pro Leu Ser Pro Glu Lys Tyr Val Thr		



1282

370                      375                      380  
 Ser Ala Pro Met Pro Glu Pro Gln Ala Pro Gly Arg Tyr Phe Ala His  
 385                      390                      395                      400  
 Ser Ile Leu Thr Val Ser Glu Glu Glu Trp Asn Thr Gly Glu Thr Tyr  
                     405                      410                      415  
 Thr Cys Val Val Ala His Glu Ala Leu Pro Asn Arg Val Thr Glu Arg  
                     420                      425                      430  
 Thr Val Asp Lys Ser Thr Gly Lys Pro Thr Leu Tyr Asn Val Ser Leu  
                     435                      440                      445  
 Val Met Ser Asp Thr Ala Gly Thr Cys Tyr  
                     450                      455

<210> 1259  
 <211> 247  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (25)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1259  
 Ala Gly Pro Ala Pro Glu Glu Pro Arg Gly Gly Ala Ala Ala Arg Trp  
   1                      5                      10                      15  
 Asp Cys Gln Pro Cys Gln Ala Ala Xaa Val Val Glu Asn Ser Ala Gln  
                     20                      25                      30  
 Arg Val Ile His Leu Ala Gly Gln Trp Glu Lys His Arg Val Pro Leu  
                     35                      40                      45  
 Leu Ala Glu Tyr Arg His Leu Arg Lys Leu Gln Asp Cys Arg Glu Leu  
                     50                      55                      60  
 Glu Ser Ser Arg Arg Leu Ala Glu Ile Gln Glu Leu His Gln Ser Val  
   65                      70                      75                      80  
 Arg Ala Ala Ala Glu Glu Ala Arg Arg Lys Glu Glu Val Tyr Lys Gln  
                     85                      90                      95  
 Leu Met Ser Glu Leu Glu Thr Leu Pro Arg Asp Val Ser Arg Leu Ala  
                     100                      105                      110

1283

Tyr Thr Gln Arg Ile Leu Glu Ile Val Gly Asn Ile Arg Lys Gln Lys  
 115 120 125  
 Glu Glu Ile Thr Lys Ile Leu Ser Asp Thr Lys Glu Leu Gln Lys Glu  
 130 135 140  
 Ile Asn Ser Leu Ser Gly Lys Leu Asp Arg Thr Phe Ala Val Thr Asp  
 145 150 155 160  
 Glu Leu Val Phe Lys Asp Ala Lys Lys Asp Asp Ala Val Arg Lys Ala  
 165 170 175  
 Tyr Lys Tyr Leu Ala Ala Leu His Glu Asn Cys Ser Gln Leu Ile Gln  
 180 185 190  
 Thr Ile Glu Asp Thr Gly Thr Ile Met Arg Glu Val Arg Asp Leu Glu  
 195 200 205  
 Glu Gln Ile Glu Thr Glu Leu Gly Lys Lys Thr Leu Ser Asn Leu Glu  
 210 215 220  
 Lys Ile Arg Glu Asp Tyr Arg Ala Leu Arg Gln Glu Asn Ala Gly Leu  
 225 230 235 240  
 Leu Gly Arg Val Arg Glu Ala  
 245

<210> 1260  
 <211> 62  
 <212> PRT  
 <213> Homo sapiens

<400> 1260  
 Val Gly Ile Lys Trp Ile Glu Glu Ala Val Leu Cys Ala Asn Val Ser  
 1 5 10 15  
 Phe Ala Ser Asp Arg Tyr Leu Phe Val Ile Arg Arg Val Ala Ser Phe  
 20 25 30  
 His Leu Gly Ala Glu Asn Ser Arg Gln Leu Leu Thr Asp Lys Phe Asn  
 35 40 45  
 Leu His Leu Gln Tyr Cys Met Leu Gly Ile Ser Ala Tyr Phe  
 50 55 60

<210> 1261  
 <211> 243

1284

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (76)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (210)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (226)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1261

Gln	Glu	Arg	Pro	Gly	Asn	Phe	Tyr	Val	Ser	Ser	Glu	Ser	Ile	Arg	Lys
1				5				10						15	

Gly	Pro	Pro	Val	Arg	Pro	Trp	Arg	Asp	Arg	Pro	Gln	Ser	Ser	Ile	Tyr
			20				25						30		

Asp	Pro	Phe	Ala	Gly	Met	Lys	Thr	Pro	Gly	Gln	Arg	Gln	Leu	Ile	Thr
		35					40					45			

Leu	Gln	Glu	Gln	Val	Lys	Leu	Gly	Ile	Val	Asn	Val	Asp	Glu	Ala	Val
	50					55						60			

Leu	His	Phe	Lys	Glu	Trp	Gln	Leu	Asn	Gln	Lys	Xaa	Arg	Ser	Glu	Ser
	65				70					75				80	

Phe	Arg	Phe	Gln	Gln	Glu	Asn	Leu	Lys	Arg	Leu	Arg	Asp	Ser	Ile	Thr
			85					90						95	

Arg	Arg	Gln	Arg	Glu	Lys	Gln	Lys	Ser	Gly	Lys	Gln	Thr	Asp	Leu	Glu
			100					105					110		

Ile	Thr	Val	Pro	Ile	Arg	His	Ser	Gln	His	Leu	Pro	Ala	Lys	Val	Glu
		115					120					125			

Phe	Gly	Val	Tyr	Glu	Ser	Gly	Pro	Arg	Lys	Ser	Val	Ile	Pro	Pro	Arg
	130					135					140				

Thr	Glu	Leu	Arg	Arg	Gly	Asp	Trp	Lys	Thr	Asp	Ser	Thr	Ser	Ser	Thr
145					150					155					160

Ala	Ser	Ser	Thr	Ser	Asn	Arg	Ser	Ser	Thr	Arg	Ser	Leu	Leu	Ser	Val
				165					170					175	

1285

Ser Ser Gly Met Glu Gly Asp Asn Glu Asp Asn Glu Val Pro Glu Val  
 180 185 190  
 Thr Arg Ser Arg Ser Pro Gly Pro Pro Gln Val Asp Gly Thr Pro Thr  
 195 200 205  
 Met Xaa Leu Glu Arg Pro Pro Arg Val Pro Pro Arg Ala Ala Ser Gln  
 210 215 220  
 Arg Xaa Pro Thr Arg Glu Thr Phe His Pro Pro Pro Pro Val Pro Pro  
 225 230 235 240  
 Arg Gly Arg

&lt;210&gt; 1262

&lt;211&gt; 75

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1262

Lys Tyr Val Arg Asn Asp Gln Asn Lys Arg Lys Phe Leu Phe Ser Cys  
 1 5 10 15  
 Lys Tyr Phe Ser Ser Val Ile Thr Leu Lys Tyr Lys Leu Lys Tyr Asn  
 20 25 30  
 Thr Pro Glu Cys Leu Arg His Asp Leu Asp Phe Lys Cys Val Val Phe  
 35 40 45  
 Ile Glu Lys Lys Leu Ser Thr His Leu Val Phe Gln Glu Asn Leu Lys  
 50 55 60  
 Arg Ser Gln Gly Lys Met Ile Cys Met Leu Lys  
 65 70 75

&lt;210&gt; 1263

&lt;211&gt; 475

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (249)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1286

&lt;400&gt; 1263

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Arg Thr Gly Leu Gly Arg Asp Val Gly Ala Gly Ala Arg Arg Ala Ala
 1           5           10           15

Arg Cys Arg Ala Glu Ala Ala Ala Val Gly Thr Ala Arg Ser Pro
      20           25           30

Ala Leu Gly Met Ala Leu Leu Val Leu Gly Leu Val Ser Cys Thr Phe
      35           40           45

Phe Leu Ala Val Asn Gly Leu Tyr Ser Ser Ser Asp Asp Val Ile Glu
      50           55           60

Leu Thr Pro Ser Asn Phe Asn Arg Glu Val Ile Gln Ser Asp Ser Leu
      65           70           75           80

Trp Leu Val Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Gln Arg Leu
      85           90           95

Thr Pro Glu Trp Lys Lys Ala Ala Thr Ala Leu Lys Asp Val Val Lys
      100          105          110

Val Gly Ala Val Asp Ala Asp Lys His His Ser Leu Gly Gly Gln Tyr
      115          120          125

Gly Val Gln Gly Phe Pro Thr Ile Lys Ile Phe Gly Ser Asn Lys Asn
      130          135          140

Arg Pro Glu Asp Tyr Gln Gly Gly Arg Thr Gly Glu Ala Ile Val Asp
      145          150          155          160

Ala Ala Leu Ser Ala Leu Arg Gln Leu Val Lys Asp Arg Leu Gly Gly
      165          170          175

Arg Ser Gly Gly Tyr Ser Ser Gly Lys Gln Gly Arg Ser Asp Ser Ser
      180          185          190

Ser Lys Lys Asp Val Ile Glu Leu Thr Asp Asp Ser Phe Asp Lys Asn
      195          200          205

Val Leu Asp Ser Glu Asp Val Trp Met Val Glu Phe Tyr Ala Pro Trp
      210          215          220

Cys Gly His Cys Lys Asn Leu Glu Pro Glu Trp Ala Ala Ala Ala Ser
      225          230          235          240

Glu Val Lys Glu Gln Thr Lys Gly Xaa Val Lys Leu Ala Ala Val Asp
      245          250          255

Ala Thr Val Asn Gln Val Leu Ala Ser Arg Tyr Gly Ile Arg Gly Phe
      260          265          270

```

1287

Pro Thr Ile Lys Ile Phe Gln Lys Gly Glu Ser Pro Val Asp Tyr Asp  
 275 280 285  
 Gly Gly Arg Thr Arg Ser Asp Ile Val Ser Arg Ala Leu Asp Leu Phe  
 290 295 300  
 Ser Asp Asn Ala Pro Pro Pro Glu Leu Leu Glu Ile Ile Asn Glu Asp  
 305 310 315 320  
 Ile Ala Lys Arg Thr Cys Glu Glu His Gln Leu Cys Val Val Ala Val  
 325 330 335  
 Leu Pro His Ile Leu Asp Thr Gly Ala Ala Gly Arg Asn Ser Tyr Leu  
 340 345 350  
 Glu Val Leu Leu Lys Leu Ala Asp Lys Tyr Lys Lys Lys Met Trp Gly  
 355 360 365  
 Trp Leu Trp Thr Glu Ala Gly Ala Gln Ser Glu Leu Glu Thr Ala Leu  
 370 375 380  
 Gly Ile Gly Gly Phe Gly Tyr Pro Ala Met Ala Ala Ile Asn Ala Arg  
 385 390 395 400  
 Lys Met Lys Phe Ala Leu Leu Lys Gly Ser Phe Ser Glu Gln Gly Ile  
 405 410 415  
 Asn Glu Phe Leu Arg Glu Leu Ser Phe Gly Arg Gly Ser Thr Ala Pro  
 420 425 430  
 Val Gly Gly Gly Ala Phe Pro Thr Ile Val Glu Arg Glu Pro Trp Asp  
 435 440 445  
 Gly Arg Asp Gly Glu Leu Pro Val Glu Asp Asp Ile Asp Leu Ser Asp  
 450 455 460  
 Val Glu Leu Asp Asp Leu Gly Lys Asp Glu Leu  
 465 470 475

&lt;210&gt; 1264

&lt;211&gt; 398

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1288

&lt;400&gt; 1264

His Phe Glu Arg Thr Ser Ser Lys Arg Val Ser Arg Ser Leu Asp Gly  
 1 5 10 15  
 Ala Pro Ile Gly Val Met Asp Gln Ser Leu Met Xaa Asp Phe Pro Gly  
 20 25 30  
 Ala Ala Gly Glu Ile Ser Ala Tyr Gly Pro Gly Leu Val Ser Ile Ala  
 35 40 45  
 Val Val Gln Asp Gly Asp Gly Arg Arg Glu Val Arg Ser Pro Thr Lys  
 50 55 60  
 Ala Pro His Leu Gln Leu Ile Glu Gly Lys Ser Ser His Glu Thr Leu  
 65 70 75 80  
 Asn Ile Val Glu Glu Lys Lys Arg Ala Glu Val Gly Lys Asp Glu Arg  
 85 90 95  
 Val Ile Thr Glu Glu Met Asn Gly Lys Glu Ile Ser Pro Gly Ser Gly  
 100 105 110  
 Pro Gly Glu Ile Arg Lys Val Glu Pro Val Thr Gln Lys Asp Ser Thr  
 115 120 125  
 Ser Leu Ser Ser Glu Ser Ser Ser Ser Ser Ser Glu Ser Glu Glu Glu  
 130 135 140  
 Asp Val Gly Glu Tyr Arg Pro His His Arg Val Thr Glu Gly Thr Ile  
 145 150 155 160  
 Arg Glu Glu Gln Glu Tyr Glu Glu Glu Val Glu Glu Glu Pro Arg Pro  
 165 170 175  
 Ala Ala Lys Val Val Glu Arg Glu Glu Ala Val Pro Glu Ala Ser Pro  
 180 185 190  
 Val Thr Gln Ala Gly Ala Ser Val Ile Thr Val Glu Thr Val Ile Gln  
 195 200 205  
 Glu Asn Val Gly Ala Gln Lys Ile Pro Gly Glu Lys Ser Val His Glu  
 210 215 220  
 Gly Ala Leu Lys Gln Asp Met Gly Glu Glu Ala Glu Glu Glu Pro Gln  
 225 230 235 240  
 Lys Val Asn Gly Glu Val Ser His Val Asp Ile Asp Val Leu Pro Gln  
 245 250 255  
 Ile Ile Cys Cys Ser Glu Pro Pro Val Val Lys Thr Glu Met Val Thr

1289

260				265				270							
Ile	Ser	Asp	Ala	Ser	Gln	Arg	Thr	Glu	Ile	Ser	Thr	Lys	Glu	Val	Pro
		275					280					285			
Ile	Val	Gln	Thr	Glu	Thr	Lys	Thr	Ile	Thr	Tyr	Glu	Ser	Pro	Gln	Ile
		290				295					300				
Asp	Gly	Gly	Ala	Gly	Gly	Asp	Ser	Gly	Thr	Leu	Leu	Thr	Ala	Gln	Thr
305					310					315					320
Ile	Thr	Ser	Glu	Ser	Val	Ser	Thr	Thr	Thr	Thr	Thr	His	Ile	Thr	Lys
			325						330					335	
Thr	Val	Lys	Gly	Gly	Ile	Ser	Glu	Thr	Arg	Ile	Glu	Lys	Arg	Ile	Val
			340						345				350		
Ile	Thr	Gly	Asp	Gly	Asp	Ile	Asp	His	Asp	Gln	Ala	Leu	Ala	Gln	Ala
		355					360					365			
Ile	Arg	Glu	Ala	Arg	Glu	Gln	His	Pro	Asp	Met	Ser	Val	Thr	Arg	Val
	370					375					380				
Val	Val	His	Lys	Glu	Thr	Glu	Leu	Ala	Glu	Glu	Gly	Glu	Asp		
385					390					395					

<210> 1265

<211> 207

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

&lt;222&gt; (99)

<223> Xaa equals any of the naturally occurring L-amino acids

**<400> 1265**

Trp Thr Gly Thr Gly Arg Gly Ala Val Ala Ile Met Ala Asp Pro Asp  
1 5 10 15

Pro Arg Tyr Pro Arg Ser Ser Ile Glu Asp Asp Phe Asn Tyr Gly Ser  
20 25 30

Ser Val Ala Ser Ala Thr Val His Ile Arg Met Ala Phe Leu Arg Lys  
35 40 45

Val Tyr Ser Ile Leu Ser Leu Gln Val Leu Leu Thr Thr Val Thr Ser  
50 55 60



1290

```

Thr Val Phe Leu Tyr Phe Glu Ser Val Arg Thr Phe Val His Glu Ser
 65              70              75              80

Pro Ala Leu Ile Leu Leu Phe Ala Leu Gly Ser Leu Gly Leu Ile Phe
              85              90              95

Ala Leu Xaa Leu Asn Arg His Lys Tyr Pro Leu Asn Leu Tyr Leu Leu
              100              105              110

Phe Gly Phe Thr Leu Leu Glu Ala Leu Thr Val Ala Val Val Val Thr
              115              120              125

Phe Tyr Asp Val Tyr Ile Ile Leu Gln Ala Phe Ile Leu Thr Thr Thr
              130              135              140

Val Phe Phe Gly Leu Thr Val Tyr Thr Leu Gln Ser Lys Lys Asp Phe
145              150              155              160

Ser Lys Phe Gly Ala Gly Leu Phe Ala Leu Leu Trp Ile Leu Cys Leu
              165              170              175

Ser Gly Phe Leu Lys Phe Phe Phe Tyr Ser Glu Ile Met Glu Leu Val
              180              185              190

Leu Ala Ala Ala Gly Ala Leu Leu Phe Trp Gly Ile His His Leu
              195              200              205

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&lt;210&gt; 1266

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1266

```

Ser Arg Asp Pro Asn Gly Trp Trp Arg Arg Leu Arg Val Ser Ala Glu
 1              5              10              15

Leu Ala Met Ala Gln Leu Cys Gly Leu Arg Arg Ser Arg Ala Phe Leu
              20              25              30

Ala Leu Leu Gly Ser Leu Leu Leu Ser Gly Val Leu Ala Ala Asp Arg
              35              40              45

Glu Arg Ser Ile His Asp Phe Cys Leu Val Ser Lys Val Val Gly Arg
              50              55              60

Cys Arg Ala Ser Met Pro Arg Trp Trp Tyr Asn Val Thr Asp Gly Ser
              65              70              75              80

Cys Gln Leu Phe Val Tyr Gly Gly Cys Asp Gly Asn Ser Asn Asn Tyr

```

1291

85					90					95						
Leu	Thr	Lys	Glu	Glu	Cys	Leu	Lys	Lys	Cys	Ala	Thr	Val	Thr	Glu	Asn	
100					105					110						
Ala	Thr	Gly	Asp	Leu	Ala	Thr	Ser	Arg	Asn	Ala	Ala	Asp	Ser	Ser	Val	
115					120					125						
Pro	Ser	Ala	Pro	Arg	Arg	Gln	Asp	Ser	Glu	Asp	His	Ser	Ser	Asp	Met	
130					135					140						
Phe	Asn	Tyr	Glu	Glu	Tyr	Cys	Thr	Ala	Asn	Ala	Val	Thr	Gly	Pro	Cys	
145					150					155					160	
Arg	Ala	Ser	Phe	Pro	Arg	Trp	Tyr	Phe	Asp	Val	Glu	Arg	Asn	Ser	Cys	
165					170					175						
Asn	Asn	Phe	Ile	Tyr	Gly	Gly	Cys	Arg	Gly	Asn	Lys	Asn	Ser	Tyr	Arg	
180					185					190						
Ser	Glu	Glu	Ala	Cys	Met	Leu	Arg	Cys	Phe	Arg	Gln	Gln	Glu	Asn	Pro	
195					200					205						
Pro	Leu	Pro	Leu	Gly	Ser	Lys	Val	Val	Val	Leu	Ala	Gly	Leu	Phe	Val	
210					215					220						
Met	Val	Leu	Ile	Leu	Phe	Leu	Gly	Ala	Ser	Met	Val	Tyr	Leu	Ile	Arg	
225					230					235					240	
Val	Ala	Arg	Arg	Asn	Gln	Glu	Arg	Ala	Leu	Arg	Thr	Val	Trp	Ser	Ser	
245					250					255						
Gly	Asp	Asp	Lys	Glu	Gln	Leu	Val	Lys	Asn	Thr	Tyr	Val	Leu	Cys	Arg	
260					265					270						
Pro	Val	Ala	Lys	Arg	Thr	Gly	Glu	Gly	Arg	Gly	Asp	Met	Cys	Asp	Phe	
275					280					285						

Phe

&lt;210&gt; 1267

&lt;211&gt; 284

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

1292

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1267

Arg	Gly	Arg	Arg	Xaa	Xaa	Ala	Ser	Leu	Arg	Gly	Trp	Pro	Val	Arg	Arg
1				5					10					15	

Gly	Met	Gly	Arg	Val	Gln	Leu	Phe	Glu	Ile	Ser	Leu	Ser	His	Gly	Arg
			20					25					30		

Val	Val	Tyr	Ser	Pro	Gly	Glu	Pro	Leu	Ala	Gly	Thr	Val	Arg	Val	Arg
		35					40					45			

Leu	Gly	Ala	Pro	Leu	Pro	Phe	Arg	Ala	Ile	Arg	Val	Thr	Cys	Ile	Gly
	50					55					60				

Ser	Cys	Gly	Val	Ser	Asn	Lys	Ala	Asn	Asp	Thr	Ala	Trp	Val	Val	Glu
65					70					75					80

Glu	Gly	Tyr	Phe	Asn	Ser	Ser	Leu	Ser	Leu	Ala	Asp	Lys	Gly	Ser	Leu
				85					90					95	

Pro	Ala	Gly	Glu	His	Ser	Phe	Pro	Phe	Gln	Phe	Leu	Leu	Pro	Ala	Thr
		100						105					110		

Ala	Pro	Thr	Ser	Phe	Glu	Gly	Pro	Phe	Gly	Lys	Ile	Val	His	Gln	Val
		115					120					125			

Arg	Ala	Ala	Ile	His	Thr	Pro	Arg	Phe	Ser	Lys	Asp	His	Lys	Cys	Ser
	130					135					140				

Leu	Val	Phe	Tyr	Ile	Leu	Ser	Pro	Leu	Asn	Leu	Asn	Ser	Ile	Pro	Asp
145					150				155					160	

Ile	Glu	Gln	Pro	Asn	Val	Ala	Ser	Ala	Thr	Lys	Lys	Phe	Ser	Tyr	Lys
			165						170					175	

Leu	Val	Lys	Thr	Gly	Ser	Val	Val	Leu	Thr	Ala	Ser	Thr	Asp	Leu	Arg
		180						185					190		

Gly	Tyr	Val	Val	Gly	Gln	Ala	Leu	Gln	Leu	His	Ala	Asp	Val	Glu	Asn
		195					200					205			

Gln	Ser	Gly	Lys	Asp	Thr	Ser	Pro	Val	Val	Ala	Ser	Leu	Leu	Gln	Lys
	210					215					220				

Val	Ser	Tyr	Lys	Ala	Lys	Arg	Trp	Ile	His	Asp	Val	Arg	Thr	Ile	Ala
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1293

225                      230                      235                      240  
 Glu Val Glu Gly Ala Gly Val Lys Ala Trp Arg Arg Ala Gln Trp His  
                                  245                      250                      255  
 Glu Gln Ile Leu Val Pro Ala Leu Pro Gln Ser Ala Leu Pro Ala Ala  
                                  260                      265                      270  
 Ala Ser Ser Thr Ser Thr Thr Thr Tyr Arg Ser Leu  
                                  275                      280

&lt;210&gt; 1268

&lt;211&gt; 254

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1268

Val Trp Leu Arg Val Glu Asn Val Cys Gln Gly Pro Gly Gln Glu Gly  
   1                                  5                                  10                                  15  
 Gly Pro Pro Val Thr Met Val Ser Met Ser Phe Lys Arg Asn Arg Ser  
                                   20                                  25                                  30  
 Asp Arg Phe Tyr Ser Thr Arg Cys Cys Gly Cys Cys His Val Arg Thr  
                                   35                                  40                                  45  
 Gly Thr Ile Ile Leu Gly Thr Trp Tyr Met Val Val Asn Leu Leu Met  
   50                                  55                                  60  
 Ala Ile Leu Leu Thr Val Glu Val Thr His Pro Asn Ser Met Pro Ala  
   65                                  70                                  75                                  80  
 Val Asn Ile Gln Tyr Glu Val Ile Gly Asn Tyr Tyr Ser Ser Glu Arg  
                                   85                                  90                                  95  
 Met Ala Asp Asn Ala Cys Val Leu Phe Ala Val Ser Val Leu Met Phe  
                                   100                                  105                                  110  
 Ile Ile Ser Ser Met Leu Val Tyr Gly Ala Ile Ser Tyr Gln Val Gly  
                                   115                                  120                                  125  
 Trp Leu Ile Pro Phe Phe Cys Tyr Arg Leu Phe Asp Phe Val Leu Ser  
                                   130                                  135                                  140  
 Cys Leu Val Ala Ile Ser Ser Leu Thr Tyr Leu Pro Arg Ile Lys Glu  
   145                                  150                                  155                                  160  
 Tyr Leu Asp Gln Leu Pro Asp Phe Pro Tyr Lys Asp Asp Leu Leu Ala  
                                   165                                  170                                  175

1294

Leu Asp Ser Ser Cys Leu Leu Phe Ile Val Leu Val Phe Phe Ala Leu  
 180 185 190  
 Phe Ile Ile Phe Lys Ala Tyr Leu Ile Asn Cys Val Trp Asn Cys Tyr  
 195 200 205  
 Lys Tyr Ile Asn Asn Arg Asn Val Pro Glu Ile Ala Val Tyr Pro Ala  
 210 215 220  
 Phe Glu Ala Pro Pro Gln Tyr Val Leu Pro Thr Tyr Glu Met Ala Val  
 225 230 235 240  
 Lys Met Pro Glu Lys Glu Pro Pro Pro Tyr Leu Pro Ala  
 245 250

&lt;210&gt; 1269

&lt;211&gt; 67

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1269

Lys Ser Ile Leu Val Ile Arg Val Tyr Phe Phe Tyr Arg Thr Arg Trp  
 1 5 10 15

Xaa Gly Gly Glu Pro Phe Thr Leu Leu Val Lys Leu Asn His Arg Lys  
 20 25 30

Phe Thr Ile Cys Leu Ser Gln Thr Leu Ala Val Arg Gly Met Val Ala

1295

35 40 45  
Xaa Ala Cys Xaa Xaa Pro Ala Cys Trp Gly Gly Pro Ser Trp Gly Gly  
50 55 60  
Leu Pro Glu  
65

&lt;210&gt; 1270

&lt;211&gt; 164

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (138)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (152)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (161)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (164)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1270

1296

Gly Ser Pro Gly Thr Xaa Arg Ile Pro Xaa Thr Arg Xaa Glu Thr Cys  
 1 5 10 15  
 Phe Asp Lys Tyr Thr Gly Asn Thr Tyr Arg Val Gly Asp Thr Tyr Glu  
 20 25 30  
 Arg Pro Lys Asp Ser Met Ile Trp Asp Cys Thr Cys Ile Gly Ala Gly  
 35 40 45  
 Arg Gly Arg Ile Ser Cys Thr Ile Ala Asn Arg Cys His Glu Gly Gly  
 50 55 60  
 Gln Ser Tyr Lys Ile Gly Asp Thr Trp Arg Arg Pro His Glu Thr Gly  
 65 70 75 80  
 Gly Tyr Met Leu Glu Cys Val Cys Leu Gly Asn Gly Lys Gly Glu Trp  
 85 90 95  
 Thr Cys Lys Pro Ile Ala Glu Lys Cys Phe Asp His Ala Ala Gly Thr  
 100 105 110  
 Ser Tyr Val Val Gly Glu Thr Trp Glu Lys Pro Tyr Gln Gly Trp Met  
 115 120 125  
 Met Val Asp Cys Thr Cys Leu Gly Glu Xaa Ser Gly Arg Ile Thr Cys  
 130 135 140  
 Thr Ser Arg Asn Arg Cys Asn Xaa Gln Asp Thr Arg Thr Ser Ile Glu  
 145 150 155 160  
 Xaa Glu Thr Xaa

&lt;210&gt; 1271

&lt;211&gt; 363

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1271

Ala Arg Gly Ser Glu Cys Gly Gln Arg Ala Glu Ala Val Ser His Arg  
 1 5 10 15  
 Arg Arg Arg Arg Ala Gln Ala Ser Ser Phe Gly Trp Gly Ala Ala Glu  
 20 25 30  
 Leu Thr Ser Asp Ile Ser Ala Pro Phe Thr Arg Arg Asn Pro Gly Ala  
 35 40 45  
 Gly Ala Arg Ser Ala Gly Val Thr Met Thr Lys Ala Gly Ser Lys Gly

1297

50	55	60
Gly Asn Leu Arg Asp Lys Leu Asp Gly Asn Glu Leu Asp Leu Ser Leu		
65	70	75 80
Ser Asp Leu Asn Glu Val Pro Val Lys Glu Leu Ala Ala Leu Pro Lys		
	85	90 95
Ala Thr Ile Leu Asp Leu Ser Cys Asn Lys Leu Thr Thr Leu Pro Ser		
	100	105 110
Asp Phe Cys Gly Leu Thr His Leu Val Lys Leu Asp Leu Ser Lys Asn		
	115	120 125
Lys Leu Gln Gln Leu Pro Ala Asp Phe Gly Arg Leu Val Asn Leu Gln		
	130	135 140
His Leu Asp Leu Leu Asn Asn Lys Leu Val Thr Leu Pro Val Ser Phe		
	145	150 155 160
Ala Gln Leu Lys Asn Leu Lys Trp Leu Asp Leu Lys Asp Asn Pro Leu		
	165	170 175
Asp Pro Val Leu Ala Lys Val Ala Gly Asp Cys Leu Asp Glu Lys Gln		
	180	185 190
Cys Lys Gln Cys Ala Asn Lys Val Leu Gln His Met Lys Ala Val Gln		
	195	200 205
Ala Asp Gln Glu Arg Glu Arg Gln Arg Arg Leu Glu Val Glu Arg Glu		
	210	215 220
Ala Glu Lys Lys Arg Glu Ala Lys Gln Arg Ala Lys Glu Ala Gln Glu		
	225	230 235 240
Arg Glu Leu Arg Lys Arg Glu Lys Ala Glu Glu Lys Glu Arg Arg Arg		
	245	250 255
Lys Glu Tyr Asp Ala Leu Lys Ala Ala Lys Arg Glu Gln Glu Lys Lys		
	260	265 270
Pro Lys Lys Glu Ala Asn Gln Ala Pro Lys Ser Lys Ser Gly Ser Arg		
	275	280 285
Pro Arg Lys Pro Pro Pro Arg Lys His Thr Arg Ser Trp Ala Val Leu		
	290	295 300
Lys Leu Leu Leu Leu Leu Leu Phe Gly Val Ala Gly Gly Leu Val		
	305	310 315 320
Ala Cys Arg Val Thr Glu Leu Gln Gln Gln Pro Leu Cys Thr Ser Val		



1298

```

          325              330              335
Asn Thr Ile Tyr Asp Asn Ala Val Gln Gly Leu Arg Arg His Glu Ile
          340              345              350
Leu Gln Trp Val Leu Gln Thr Asp Ser Gln Gln
          355              360

```

<210> 1272

<211> 144

<212> PRT

<213> Homo sapiens

 $\langle 220 \rangle$ 

<221> SITE

$\langle 222 \rangle$  (112)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (116)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

**<222> (124)**

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1272

Gly Leu Val Met Ala Pro Ile Ala Cys Leu Leu Pro Ala Phe Ser Ser  
1 5 10 15

Ala Pro Glu Ala Met His Pro Trp Glu Leu Phe Val Lys Tyr Tyr His  
20 25 30

Ala Lys Asn Gly Arg Ala Tyr Val Glu Ser Pro Ala Arg Lys Leu Ser  
35 40 45

Gln Ser Phe Ala Leu Pro Val Thr Gly Gly Thr Val Val Thr Pro Lys  
50 55 60

Gln Ser Leu Leu Thr Ala Ile His Met Val Leu Thr Glu His Asp Pro  
65 70 75 80

Phe Lys Arg Ser Ala Asp Ser Glu Leu Lys Ala Leu Val Cys Met Ala  
85 90 95

Leu Asn Glu Pro Ala Ser Gly Val Leu Gly Glu Pro His Leu Gln Xaa  
100 105 110

1299

Arg Val Thr Xaa Arg Ala Ser Leu Pro Ala Leu Xaa Leu His Gly Thr  
 115 120 125

His Arg Leu Leu Lys Ile Ala Ser Thr Cys Ser Val Ala Ser Thr Thr  
 130 135 140

&lt;210&gt; 1273

&lt;211&gt; 252

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (32)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1273

Ala Arg Ala Pro Pro Arg Pro Arg Arg Ala Gly Arg Cys Gln Leu Pro  
 1 5 10 15

Gln Arg Pro Ala Glu Ala Arg Cys Met Leu Ser Arg Cys Arg Ser Xaa  
 20 25 30

Leu Leu His Val Leu Gly Leu Ser Phe Leu Leu Gln Thr Arg Arg Pro  
 35 40 45

Ile Leu Leu Cys Ser Pro Arg Leu Met Lys Pro Leu Val Val Phe Val  
 50 55 60

Leu Gly Gly Pro Gly Ala Gly Lys Gly Thr Gln Cys Ala Arg Ile Val  
 65 70 75 80

Glu Lys Tyr Gly Tyr Thr His Leu Ser Ala Gly Glu Leu Leu Arg Asp  
 85 90 95

Glu Arg Lys Asn Pro Asp Ser Gln Tyr Gly Glu Leu Ile Glu Lys Tyr  
 100 105 110

Ile Lys Glu Gly Lys Ile Val Pro Val Glu Ile Thr Ile Ser Leu Leu  
 115 120 125

Lys Arg Glu Met Asp Gln Thr Met Ala Ala Asn Ala Gln Lys Asn Lys  
 130 135 140

Phe Leu Ile Asp Gly Phe Pro Arg Asn Gln Asp Asn Leu Gln Gly Trp

1300

```

145              150              155              160
Asn Lys Thr Met Asp Gly Lys Ala Asp Val Ser Phe Val Leu Phe Phe
              165              170              175
Asp Cys Asn Asn Glu Ile Cys Ile Glu Arg Cys Leu Glu Arg Gly Lys
              180              185              190
Ser Ser Gly Arg Ser Asp Asp Asn Arg Glu Ser Leu Glu Lys Arg Ile
              195              200              205
Gln Thr Tyr Leu Gln Ser Thr Lys Pro Ile Ile Asp Leu Tyr Glu Glu
              210              215              220
Met Gly Lys Val Lys Lys Ile Asp Ala Ser Lys Ser Val Asp Glu Val
225              230              235              240
Phe Asp Glu Val Val Gln Ile Phe Asp Lys Glu Gly
              245              250

```

&lt;210&gt; 1274

&lt;211&gt; 425

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1274

```

Ala Ser Glu Arg Ser Glu Ala Arg Arg Lys Leu Arg Glu Cys Asp Gly
  1              5              10              15
Leu Val Asp Ala Leu Ile Phe Ile Val Gln Ala Glu Ile Gly Gln Lys
              20              25              30
Asp Ser Xaa Ser Lys Leu Val Glu Asn Cys Val Cys Leu Leu Arg Asn
              35              40              45
Leu Ser Tyr Gln Val His Arg Glu Ile Pro Gln Ala Glu Arg Tyr Gln
              50              55              60
Glu Ala Ala Pro Asn Val Ala Asn Asn Thr Gly Pro His Ala Ala Ser
              65              70              75              80
Cys Phe Gly Ala Lys Lys Gly Lys Gly Lys Lys Pro Ile Glu Asp Pro
              85              90              95

```

1301

Ala	Asn	Asp	Thr	Val	Asp	Phe	Pro	Lys	Arg	Thr	Ser	Pro	Ala	Arg	Gly	100	105	110	
Tyr	Glu	Leu	Leu	Phe	Gln	Pro	Glu	Val	Val	Arg	Ile	Tyr	Ile	Ser	Leu	115	120	125	
Leu	Lys	Glu	Ser	Lys	Thr	Pro	Ala	Ile	Leu	Glu	Ala	Ser	Ala	Gly	Ala	130	135	140	
Ile	Gln	Asn	Leu	Cys	Ala	Gly	Arg	Trp	Thr	Tyr	Gly	Arg	Tyr	Ile	Arg	145	150	155	160
Ser	Ala	Leu	Arg	Gln	Glu	Lys	Ala	Leu	Ser	Ala	Ile	Ala	Asp	Leu	Leu	165	170	175	
Thr	Asn	Glu	His	Glu	Arg	Val	Val	Lys	Ala	Ala	Ser	Gly	Ala	Leu	Arg	180	185	190	
Asn	Leu	Ala	Val	Asp	Ala	Arg	Asn	Lys	Glu	Leu	Ile	Gly	Lys	His	Ala	195	200	205	
Ile	Pro	Asn	Leu	Val	Lys	Asn	Leu	Pro	Gly	Gly	Gln	Gln	Asn	Ser	Ser	210	215	220	
Trp	Asn	Phe	Ser	Glu	Asp	Thr	Val	Ile	Ser	Ile	Leu	Asn	Thr	Ile	Asn	225	230	235	240
Glu	Val	Ile	Ala	Glu	Asn	Leu	Glu	Ala	Ala	Lys	Lys	Leu	Arg	Glu	Thr	245	250	255	
Gln	Gly	Ile	Glu	Lys	Leu	Val	Leu	Ile	Asn	Lys	Ser	Gly	Asn	Arg	Ser	260	265	270	
Glu	Lys	Glu	Val	Arg	Ala	Ala	Ala	Leu	Val	Leu	Gln	Thr	Ile	Trp	Gly	275	280	285	
Tyr	Lys	Glu	Leu	Arg	Lys	Pro	Leu	Glu	Lys	Glu	Gly	Trp	Lys	Lys	Ser	290	295	300	
Asp	Phe	Gln	Val	Asn	Leu	Asn	Asn	Ala	Ser	Arg	Ser	Gln	Ser	Ser	His	305	310	315	320
Ser	Tyr	Asp	Asp	Ser	Thr	Leu	Pro	Leu	Ile	Asp	Arg	Asn	Gln	Lys	Ser	325	330	335	
Asp	Lys	Lys	Pro	Asp	Arg	Glu	Glu	Ile	Gln	Met	Ser	Asn	Met	Gly	Ser	340	345	350	
Asn	Thr	Lys	Ser	Leu	Asp	Asn	Asn	Tyr	Ser	Thr	Pro	Asn	Glu	Arg	Gly	355	360	365	

1302

Asp His Asn Arg Thr Leu Asp Arg Ser Gly Asp Leu Gly Asp Met Glu  
 370 375 380

Pro Leu Lys Gly Thr Thr Pro Leu Met Gln Asp Glu Gly Gln Glu Ser  
 385 390 395 400

Leu Glu Glu Glu Leu Asp Val Leu Val Leu Asp Asp Glu Gly Gly Gln  
 405 410 415

Val Ser Tyr Pro Ser Met Gln Lys Ile  
 420 425

&lt;210&gt; 1275

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1275

Phe Phe Phe Ser Ser Leu Phe Ser Leu Xaa Phe Leu Lys Lys Gly Lys  
 1 5 10 15

Lys Cys Ile Arg Thr Pro Lys Ile Ser Lys Pro Ile Lys Phe Glu Leu  
 20 25 30

Ser Gly Cys Thr Ser Met Lys Thr Tyr Arg Ala Lys Phe Cys Gly Val  
 35 40 45

Cys Thr Asp Gly Arg Cys Cys Thr Pro His Arg Thr Thr Thr Leu Pro  
 50 55 60

Val Glu Phe Lys Cys Pro Asp Gly Glu Val Met Lys Lys Asn Met Met  
 65 70 75 80

Phe Ile Lys Thr Cys Ala Cys His Tyr Asn Cys Pro Gly Asp Asn Asp  
 85 90 95

Ile Phe Glu Ser Leu Tyr Tyr Arg Lys Met Tyr Gly Asp Met Ala  
 100 105 110

&lt;210&gt; 1276

&lt;211&gt; 766

&lt;212&gt; PRT

1303

&lt;213&gt; Homo sapiens

&lt;400&gt; 1276

Gly Asp Phe Ile Met Leu Arg Ala Gly Arg Arg Ala Pro Leu Pro Ser  
 1 5 10 15  
 Pro Pro Ser Leu Asp Ser Pro Gly Pro Gln Leu Met Pro Ser Pro Arg  
 20 25 30  
 Pro Val Leu Leu Arg Gly Ala Arg Ala Ala Leu Leu Leu Leu Leu Pro  
 35 40 45  
 Pro Arg Leu Leu Ala Arg Pro Ser Leu Leu Leu Arg Arg Ser Leu Ser  
 50 55 60  
 Ala Ala Ser Cys Ala Pro Ile Ser Leu Pro Ala Ala Ala Ser Arg Ser  
 65 70 75 80  
 Ser Met Asp Gly Ala Gly Ala Glu Glu Val Leu Ala Pro Leu Arg Leu  
 85 90 95  
 Ala Val Arg Gln Gln Gly Asp Leu Val Arg Lys Leu Lys Glu Asp Lys  
 100 105 110  
 Ala Pro Gln Val Asp Val Asp Lys Ala Val Ala Glu Leu Lys Ala Arg  
 115 120 125  
 Lys Arg Val Leu Glu Ala Lys Glu Leu Ala Leu Gln Pro Lys Asp Asp  
 130 135 140  
 Ile Val Asp Arg Ala Lys Met Glu Asp Thr Leu Lys Arg Arg Phe Phe  
 145 150 155 160  
 Tyr Asp Gln Ala Phe Ala Ile Tyr Gly Gly Val Ser Gly Leu Tyr Asp  
 165 170 175  
 Phe Gly Pro Val Gly Cys Ala Leu Lys Asn Asn Ile Ile Gln Thr Trp  
 180 185 190  
 Arg Gln His Phe Ile Gln Glu Glu Gln Ile Leu Glu Ile Asp Cys Thr  
 195 200 205  
 Met Leu Thr Pro Glu Pro Val Leu Lys Thr Ser Gly His Val Asp Lys  
 210 215 220  
 Phe Ala Asp Phe Met Val Lys Asp Val Lys Asn Gly Glu Cys Phe Arg  
 225 230 235 240  
 Ala Asp His Leu Leu Lys Ala His Leu Gln Lys Leu Met Ser Asp Lys  
 245 250 255

1304

Lys Cys Ser Val Glu Lys Lys Ser Glu Met Glu Ser Val Leu Ala Gln  
 260 265 270  
 Leu Asp Asn Tyr Gly Gln Gln Glu Leu Ala Asp Leu Phe Val Asn Tyr  
 275 280 285  
 Asn Val Lys Ser Pro Ile Thr Gly Asn Asp Leu Ser Pro Pro Val Ser  
 290 295 300  
 Phe Asn Leu Met Phe Lys Thr Phe Ile Gly Pro Gly Gly Asn Met Pro  
 305 310 315 320  
 Gly Tyr Leu Arg Pro Glu Thr Ala Gln Gly Ile Phe Leu Asn Phe Lys  
 325 330 335  
 Arg Leu Leu Glu Phe Asn Gln Gly Lys Leu Pro Phe Ala Ala Ala Gln  
 340 345 350  
 Ile Gly Asn Ser Phe Arg Asn Glu Ile Ser Pro Arg Ser Gly Leu Ile  
 355 360 365  
 Arg Val Arg Glu Phe Thr Met Ala Glu Ile Glu His Phe Val Asp Pro  
 370 375 380  
 Ser Glu Lys Asp His Pro Lys Phe Gln Asn Val Ala Asp Leu His Leu  
 385 390 395 400  
 Tyr Leu Tyr Ser Ala Lys Ala Gln Val Ser Gly Gln Ser Ala Arg Lys  
 405 410 415  
 Met Arg Leu Gly Asp Ala Val Glu Gln Gly Val Ile Asn Asn Thr Val  
 420 425 430  
 Leu Gly Tyr Phe Ile Gly Arg Ile Tyr Leu Tyr Leu Thr Lys Val Gly  
 435 440 445  
 Ile Ser Pro Asp Lys Leu Arg Phe Arg Gln His Met Glu Asn Glu Met  
 450 455 460  
 Ala His Tyr Ala Cys Asp Cys Trp Asp Ala Glu Ser Lys Thr Ser Tyr  
 465 470 475 480  
 Gly Trp Ile Glu Ile Val Gly Cys Ala Asp Arg Ser Cys Tyr Asp Leu  
 485 490 495  
 Ser Cys His Ala Arg Ala Thr Lys Val Pro Leu Val Ala Glu Lys Pro  
 500 505 510  
 Leu Lys Glu Pro Lys Thr Val Asn Val Val Gln Phe Glu Pro Ser Lys  
 515 520 525

1305

Gly Ala Ile Gly Lys Ala Tyr Lys Lys Asp Ala Lys Leu Val Met Glu  
 530 535 540  
 Tyr Leu Ala Ile Cys Asp Glu Cys Tyr Ile Thr Glu Met Glu Met Leu  
 545 550 555 560  
 Leu Asn Glu Lys Gly Glu Phe Thr Ile Glu Thr Glu Gly Lys Thr Phe  
 565 570 575  
 Gln Leu Thr Lys Asp Met Ile Asn Val Lys Arg Phe Gln Lys Thr Leu  
 580 585 590  
 Tyr Val Glu Glu Val Val Pro Asn Val Ile Glu Pro Ser Phe Gly Leu  
 595 600 605  
 Gly Arg Ile Met Tyr Thr Val Phe Glu His Thr Phe His Val Arg Glu  
 610 615 620  
 Gly Asp Glu Gln Arg Thr Phe Phe Ser Phe Pro Ala Val Val Ala Pro  
 625 630 635 640  
 Phe Lys Cys Ser Val Leu Pro Leu Ser Gln Asn Gln Glu Phe Met Pro  
 645 650 655  
 Phe Val Lys Glu Leu Ser Glu Ala Leu Thr Arg His Gly Val Ser His  
 660 665 670  
 Lys Val Asp Asp Ser Ser Gly Ser Ile Gly Arg Arg Tyr Ala Arg Thr  
 675 680 685  
 Asp Glu Ile Gly Val Ala Phe Gly Val Thr Ile Asp Phe Asp Thr Val  
 690 695 700  
 Asn Lys Thr Pro His Thr Ala Thr Leu Arg Asp Arg Asp Ser Met Arg  
 705 710 715 720  
 Gln Ile Arg Ala Glu Ile Ser Glu Leu Pro Ser Ile Val Gln Asp Leu  
 725 730 735  
 Ala Asn Gly Asn Ile Thr Trp Ala Asp Val Glu Ala Arg Tyr Pro Leu  
 740 745 750  
 Phe Glu Gly Gln Glu Thr Gly Lys Lys Glu Thr Ile Glu Glu  
 755 760 765

&lt;210&gt; 1277

&lt;211&gt; 386

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens



1306

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (75)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1277

Leu Gly Ser Arg Gln Ala Ala Gly Thr Met Arg Gly Gln Arg Ser Leu  
 1 5 10 15

Leu Leu Gly Pro Ala Arg Leu Cys Leu Arg Leu Leu Leu Leu Gly  
 20 25 30

Tyr Arg Arg Arg Cys Pro Pro Leu Leu Arg Gly Leu Val Gln Arg Trp  
 35 40 45

Arg Tyr Gly Lys Val Cys Leu Arg Ser Leu Leu Tyr Asn Ser Phe Gly  
 50 55 60

Gly Ser Asp Thr Ala Val Asp Ala Ala Phe Xaa Pro Val Tyr Trp Leu  
 65 70 75 80

Val Asp Asn Val Ile Arg Trp Phe Gly Val Val Phe Val Val Leu Val  
 85 90 95

Ile Val Leu Thr Gly Ser Ile Val Ala Ile Ala Tyr Leu Cys Val Leu  
 100 105 110

Pro Leu Ile Leu Arg Thr Tyr Ser Val Pro Arg Leu Cys Trp His Phe  
 115 120 125

Phe Tyr Ser His Trp Asn Leu Ile Leu Ile Val Phe His Tyr Tyr Gln  
 130 135 140

Ala Ile Thr Thr Pro Pro Gly Tyr Pro Pro Gln Gly Arg Asn Asp Ile  
 145 150 155 160

Ala Thr Val Ser Ile Cys Lys Lys Cys Ile Tyr Pro Lys Pro Ala Arg  
 165 170 175

Thr His His Cys Ser Ile Cys Asn Arg Cys Val Leu Lys Met Asp His  
 180 185 190

His Cys Pro Trp Leu Asn Asn Cys Val Gly His Tyr Asn His Arg Tyr  
 195 200 205

Phe Phe Ser Phe Cys Phe Phe Met Thr Leu Gly Cys Val Tyr Cys Ser  
 210 215 220

Tyr Gly Ser Trp Asp Leu Phe Arg Glu Ala Tyr Ala Ala Ile Glu Lys  
 225 230 235 240

1307

Met Lys Gln Leu Asp Lys Asn Lys Leu Gln Ala Val Ala Asn Gln Thr  
 245 250 255

Tyr His Gln Thr Pro Pro Pro Thr Phe Ser Phe Arg Glu Arg Met Thr  
 260 265 270

His Lys Ser Leu Val Tyr Leu Trp Phe Leu Cys Ser Ser Val Ala Leu  
 275 280 285

Ala Leu Gly Ala Leu Thr Val Trp His Ala Val Leu Ile Ser Arg Gly  
 290 295 300

Glu Thr Ser Ile Glu Arg His Ile Asn Lys Lys Glu Arg Arg Arg Leu  
 305 310 315 320

Gln Ala Lys Gly Arg Val Phe Arg Asn Pro Tyr Asn Tyr Gly Cys Leu  
 325 330 335

Asp Asn Trp Lys Val Phe Leu Gly Val Asp Thr Gly Arg His Trp Leu  
 340 345 350

Thr Arg Val Leu Leu Pro Ser Ser His Leu Pro His Gly Asn Gly Met  
 355 360 365

Ser Trp Glu Pro Pro Pro Trp Val Thr Ala His Ser Ala Ser Val Met  
 370 375 380

Ala Val  
 385

<210> 1278

<211> 164

<212> PRT

<213> Homo sapiens

<400> 1278

Val Lys Ala Ser Ala Glu Thr Pro Arg Pro Gln Pro Val Asp Lys Leu  
 1 5 10 15

Glu Lys Ile Leu Glu Lys Leu Leu Thr Arg Phe Pro Gln Cys Asn Lys  
 20 25 30

Ala Gln Met Thr Asn Ile Leu Gln Gln Ile Lys Thr Ala Arg Thr Thr  
 35 40 45

Met Ala Gly Leu Thr Met Glu Glu Leu Ile Gln Leu Val Ala Ala Arg  
 50 55 60

1308

Leu Ala Glu His Glu Arg Val Ala Ala Ser Thr Gln Pro Leu Gly Arg  
 65 70 75 80  
 Ile Arg Ala Leu Phe Pro Ala Pro Leu Ala Gln Ile Ser Thr Pro Met  
 85 90 95  
 Phe Leu Pro Ser Ala Gln Val Ser Tyr Pro Gly Arg Ser Ser His Ala  
 100 105 110  
 Pro Ala Thr Cys Lys Leu Cys Leu Met Cys Gln Lys Leu Val Gln Pro  
 115 120 125  
 Ser Glu Leu His Pro Met Ala Cys Thr His Val Leu His Lys Glu Cys  
 130 135 140  
 Ile Lys Phe Trp Ala Gln Thr Asn Thr Asn Asp Thr Cys Pro Phe Cys  
 145 150 155 160  
 Pro Thr Leu Lys

&lt;210&gt; 1279

&lt;211&gt; 469

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (81)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1279

Pro Val Ala Val Gly Arg Val Arg Val Thr Ala Glu Gly Arg Xaa Met  
 1 5 10 15

Val Leu Gln Thr Thr Lys Gly Leu Arg Leu Leu Phe Asp Gly Asp Ala  
 20 25 30

His Leu Leu Met Ser Ile Pro Ser Pro Phe Arg Gly Arg Leu Cys Gly  
 35 40 45

Leu Cys Gly Asn Phe Asn Gly Asn Trp Ser Asp Asp Phe Val Leu Pro  
 50 55 60

1309

Asn Gly Ser Ala Ala Ser Ser Val Glu Thr Phe Gly Ala Ala Trp Arg  
 65 70 75 80  
 Xaa Pro Gly Ser Ser Lys Gly Cys Gly Glu Gly Cys Gly Pro Gln Gly  
 85 90 95  
 Cys Pro Val Cys Leu Ala Glu Glu Thr Ala Pro Tyr Glu Ser Asn Glu  
 100 105 110  
 Ala Cys Gly Gln Leu Arg Asn Pro Gln Gly Pro Phe Ala Thr Cys Gln  
 115 120 125  
 Ala Val Leu Ser Pro Ser Glu Tyr Phe Arg Gln Cys Val Tyr Asp Leu  
 130 135 140  
 Cys Ala Gln Lys Gly Asp Lys Ala Phe Leu Cys Arg Ser Leu Ala Ala  
 145 150 155 160  
 Tyr Thr Ala Ala Cys Gln Ala Ala Gly Val Ala Val Lys Pro Trp Arg  
 165 170 175  
 Thr Asp Ser Phe Cys Pro Leu His Cys Pro Ala His Ser His Tyr Ser  
 180 185 190  
 Ile Cys Thr Arg Thr Cys Gln Gly Ser Cys Ala Ala Leu Ser Gly Leu  
 195 200 205  
 Thr Gly Cys Thr Thr Arg Cys Phe Glu Gly Cys Glu Cys Asp Asp Arg  
 210 215 220  
 Phe Leu Leu Ser Gln Gly Val Cys Ile Pro Val Gln Asp Cys Gly Cys  
 225 230 235 240  
 Thr His Asn Gly Arg Tyr Leu Pro Val Asn Ser Ser Leu Leu Thr Ser  
 245 250 255  
 Asp Cys Ser Glu Arg Cys Ser Cys Ser Ser Ser Gly Leu Thr Cys  
 260 265 270  
 Gln Ala Ala Gly Cys Pro Pro Gly Arg Val Cys Glu Val Lys Ala Glu  
 275 280 285  
 Ala Arg Asn Cys Trp Ala Thr Arg Gly Leu Cys Val Leu Ser Val Gly  
 290 295 300  
 Ala Asn Leu Thr Thr Phe Asp Gly Ala Arg Gly Ala Thr Thr Ser Pro  
 305 310 315 320  
 Gly Val Tyr Glu Leu Ser Ser Arg Cys Pro Gly Leu Gln Asn Thr Ile  
 325 330 335

1310

Pro Trp Tyr Arg Val Val Ala Glu Val Gln Ile Cys His Gly Lys Thr  
                   340                  345                  350  
 Glu Ala Val Gly Gln Val His Ile Phe Phe Gln Asp Gly Met Val Thr  
                   355                  360                  365  
 Leu Thr Pro Asn Lys Gly Val Trp Val Asn Gly Leu Arg Val Asp Leu  
                   370                  375                  380  
 Pro Ala Glu Lys Leu Ala Ser Val Ser Val Ser Arg Thr Pro Asp Gly  
                   385                  390                  395                  400  
 Ser Leu Leu Val Arg Gln Lys Ala Gly Val Gln Val Trp Leu Gly Ala  
                   405                  410                  415  
 Asn Gly Lys Val Ala Val Ile Val Ser Asn Asp His Ala Gly Lys Leu  
                   420                  425                  430  
 Cys Gly Ala Cys Gly Asn Phe Asp Gly Asp Gln Thr Asn Asp Trp His  
                   435                  440                  445  
 Asp Ser Gln Glu Lys Pro Ala Met Glu Lys Trp Arg Ala Gln Asp Phe  
                   450                  455                  460  
 Ser Pro Cys Tyr Gly  
 465

&lt;210&gt; 1280

&lt;211&gt; 223

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (216)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (217)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1280

Gly Pro Arg Ala Leu Trp Pro Pro Pro Glu Val Gly Trp Gly Cys Ser  
   1                  5                  10                  15

Pro Asn Pro Thr Leu Leu Pro Pro Leu Ser His Phe Pro Leu Leu Arg  
                   20                  25                  30

1311

Trp Gly Thr Asn Asn Lys Glu Leu Thr Leu Pro Ala Pro Asn Pro Pro  
                   35                                  40                                  45  
 Pro Ala Pro Pro Cys Pro Pro Arg Phe Trp Phe His Phe Ser Ser Val  
           50                                  55                                  60  
 His Lys Leu Pro Leu Asp Ser Cys Val Val Phe Cys Ser Met Phe His  
   65                                  70                                  75                                  80  
 Ser Ser Thr Ser Val Ile Ala Ala Ala Thr Ser Ala Lys Cys Ser Ser  
                                   85                                  90                                  95  
 Ser Leu Pro Pro Val Leu Pro Thr Ile Pro Ser Pro Lys Ile Leu Phe  
                                   100                                  105                                  110  
 Val Gly Lys Arg Gly Trp Gly Met Ala Gly Trp Val Thr Asp Tyr Pro  
           115                                  120                                  125  
 Ser Pro Arg Glu Gly Gly Ala Leu Pro Leu Gly Cys Cys Ser Arg Val  
   130                                  135                                  140  
 Ser Lys Gly Ala Arg Ile Asp His Lys Gly Cys Arg Gly His Leu Leu  
  145                                  150                                  155                                  160  
 Pro Leu Phe Cys Trp Gly Gly Val Ala Met Ile Cys Pro Ser Leu Gly  
                                   165                                  170                                  175  
 Leu Pro Leu Trp Phe Pro Ile Cys Ser Tyr Leu Asn Lys Lys Asn Ile  
                                   180                                  185                                  190  
 Leu Phe Trp Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
           195                                  200                                  205  
 Lys Lys Lys Lys Lys Lys Lys Xaa Xaa Gly Gly Ala Pro Pro Pro  
   210                                  215                                  220

&lt;210&gt; 1281

&lt;211&gt; 37

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1281

Thr Gln Ser Lys Trp Arg Leu Glu Val Gln Cys Gly Lys Glu Lys Gln  
   1                                  5                                  10                                  15

1312

Val Phe Ile Glu Ser Thr Asn Ser Thr Pro Phe Lys Asn Phe Xaa Gly  
                   20                                  25                                  30

Thr Gln Pro Lys Gly  
                   35

&lt;210&gt; 1282

&lt;211&gt; 458

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (249)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1282

Gly Pro Gln Arg Leu Ser Pro Gly Ala Met Leu Pro Ala Ala Thr Ala  
   1                                  5                                  10                                  15

Ser Leu Leu Gly Pro Leu Leu Thr Ala Cys Ala Leu Leu Pro Phe Ala  
                   20                                  25                                  30

Gln Gly Gln Thr Pro Asn Tyr Thr Arg Pro Val Phe Leu Cys Gly Gly  
                   35                                  40                                  45

Asp Val Lys Gly Glu Ser Gly Tyr Val Ala Ser Glu Gly Phe Pro Asn  
                   50                                  55                                  60

Leu Tyr Pro Pro Asn Lys Glu Cys Ile Trp Thr Ile Thr Val Pro Glu  
   65                                  70                                  75                                  80

Gly Gln Thr Val Ser Leu Ser Phe Arg Val Phe Asp Leu Glu Leu His  
                                   85                                  90                                  95

Pro Ala Cys Arg Tyr Asp Ala Leu Glu Val Phe Ala Gly Ser Gly Thr  
                   100                                  105                                  110

Ser Gly Gln Arg Leu Gly Arg Phe Cys Gly Thr Phe Arg Pro Ala Pro  
                   115                                  120                                  125

Leu Val Ala Pro Gly Asn Gln Val Thr Leu Arg Met Thr Thr Asp Glu  
                   130                                  135                                  140

Gly Thr Gly Gly Arg Gly Phe Leu Leu Trp Tyr Ser Gly Arg Ala Thr  
   145                                  150                                  155                                  160

Ser Gly Thr Glu His Gln Phe Cys Gly Gly Arg Leu Glu Lys Ala Gln

1313

165	170	175
Gly Thr Leu Thr Thr Pro Asn Trp Pro Glu Ser Asp Tyr Pro Pro Gly		
180	185	190
Ile Ser Cys Ser Trp His Ile Ile Ala Pro Pro Asp Gln Val Ile Ala		
195	200	205
Leu Thr Phe Glu Lys Phe Asp Leu Glu Pro Asp Thr Tyr Cys Arg Tyr		
210	215	220
Asp Ser Val Ser Val Phe Asn Gly Ala Val Ser Asp Asp Ser Arg Arg		
225	230	240
Leu Gly Lys Phe Cys Gly Asp Ala Xaa Pro Gly Ser Ile Ser Ser Glu		
245	250	255
Gly Asn Glu Leu Leu Val Gln Phe Val Ser Asp Leu Ser Val Thr Ala		
260	265	270
Asp Gly Phe Ser Ala Ser Tyr Lys Thr Leu Pro Arg Gly Thr Ala Lys		
275	280	285
Glu Gly Gln Gly Pro Gly Pro Lys Arg Gly Thr Glu Pro Lys Val Lys		
290	295	300
Leu Pro Pro Lys Ser Gln Pro Pro Glu Lys Thr Glu Glu Ser Pro Ser		
305	310	315
Ala Pro Asp Ala Pro Thr Cys Pro Lys Gln Cys Arg Arg Thr Gly Thr		
325	330	335
Leu Gln Ser Asn Phe Cys Ala Ser Ser Leu Val Val Thr Ala Thr Val		
340	345	350
Lys Ser Met Val Arg Glu Pro Gly Glu Gly Leu Ala Val Thr Val Ser		
355	360	365
Leu Ile Gly Ala Tyr Lys Thr Gly Gly Leu Asp Leu Pro Ser Pro Pro		
370	375	380
Thr Gly Ala Ser Leu Lys Phe Tyr Val Pro Cys Lys Gln Cys Pro Pro		
385	390	395
Met Lys Lys Gly Val Ser Tyr Leu Leu Met Gly Gln Val Glu Glu Asn		
405	410	415
Arg Gly Pro Val Leu Pro Pro Glu Ser Phe Val Val Leu His Arg Pro		
420	425	430
Asn Gln Asp Gln Ile Leu Thr Asn Leu Ser Lys Arg Lys Cys Pro Ser		



1314

435                      440                      445  
 Gln Pro Val Arg Ala Ala Ala Ser Gln Asp  
 450                      455

<210> 1283  
 <211> 229  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (45)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (154)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (155)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1283  
 Cys Arg Ala Pro Leu Gly Ala Gly Leu Ser Pro Ala Val Arg Arg Gln  
 1                      5                      10                      15  
 Glu Pro Pro Phe Pro Leu Gly Val Thr Arg Gly Trp Gly Arg Trp Pro  
 20                      25                      30  
 Ile Gln Lys Arg Arg Glu Gly Ala Arg Pro Val Pro Xaa Ser Glu Arg  
 35                      40                      45  
 Ser Gln Glu Asp Gly Arg Gly Pro Ala Ala Arg Ser Ser Gly Thr Leu  
 50                      55                      60  
 Trp Arg Ile Arg Thr Arg Leu Ser Leu Cys Arg Asp Pro Glu Pro Pro  
 65                      70                      75                      80  
 Pro Pro Leu Cys Leu Leu Arg Val Ser Leu Leu Cys Ala Leu Arg Ala  
 85                      90                      95  
 Gly Gly Arg Gly Ser Arg Trp Gly Glu Asp Gly Ala Arg Leu Leu Leu  
 100                      105                      110  
 Leu Pro Pro Ala Arg Ala Ala Gly Asn Gly Glu Ala Glu Pro Ser Gly  
 115                      120                      125

1315

Gly Pro Ser Tyr Ala Gly Arg Met Leu Glu Ser Ser Gly Cys Lys Ala  
 130 135 140

Leu Lys Glu Gly Val Leu Glu Lys Arg Xaa Xaa Gly Cys Cys Ser Ser  
 145 150 155 160

Gly Arg Lys Ser Val Ala Ser Ser Pro Arg Lys Gly Cys Cys Leu Ser  
 165 170 175

Arg Pro Ser Ser Cys Asn Thr Ser Ser Ser Ser Asn Ser Ser Ser Ser  
 180 185 190

Ser Ser Asn Asn Ser Pro Gly Arg Gly Arg Pro Ser Arg Pro Asn Pro  
 195 200 205

Val Ala Pro Leu Ser Pro Ala Ser Ser Arg Arg Ser Ser Ser Arg Asn  
 210 215 220

Cys Thr Ser Pro Thr  
 225

<210> 1284

<211> 390

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (52)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1284

Thr Ser Val Ala Ala Ala Ala Arg Gly Arg Ala Gly Cys Pro Leu  
 1 5 10 15

Thr Ala Ala Ser Ala Ala Arg Phe Lys Met Ala Ala Cys Ser His Ser  
 20 25 30

Phe Ser Ala Glu Arg Leu Leu Thr Phe Ile Val Phe Ser Ala Arg Phe  
 35 40 45

Asp Arg Leu Xaa Pro Ala Ala Leu Ser Gly Ile Phe Tyr Gln Ala Glu  
 50 55 60

Met His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu  
 65 70 75 80

Met Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile

1316

85										90					95						
Glu	Cys	Leu	His	Ser	Phe	Cys	Lys	Thr	Cys	Ile	Val	Arg	Tyr	Leu	Glu						
100										105					110						
Thr	Ser	Lys	Tyr	Cys	Pro	Ile	Cys	Asp	Val	Gln	Val	His	Lys	Thr	Arg						
115										120					125						
Pro	Leu	Leu	Asn	Ile	Arg	Ser	Asp	Lys	Thr	Leu	Gln	Asp	Ile	Val	Tyr						
130										135					140						
Lys	Leu	Val	Pro	Gly	Leu	Phe	Lys	Asn	Glu	Met	Lys	Arg	Arg	Arg	Asp						
145										150					155						
Phe	Tyr	Ala	Ala	His	Pro	Ser	Ala	Asp	Ala	Ala	Asn	Gly	Ser	Asn	Glu						
165										170					175						
Asp	Arg	Gly	Glu	Val	Ala	Asp	Glu	Asp	Lys	Arg	Ile	Ile	Thr	Asp	Asp						
180										185					190						
Glu	Ile	Ile	Ser	Leu	Ser	Ile	Glu	Phe	Phe	Asp	Gln	Asn	Arg	Leu	Asp						
195										200					205						
Arg	Lys	Val	Asn	Lys	Asp	Lys	Glu	Lys	Ser	Lys	Glu	Glu	Val	Asn	Asp						
210										215					220						
Lys	Arg	Tyr	Leu	Arg	Cys	Pro	Ala	Ala	Met	Thr	Val	Met	His	Leu	Arg						
225										230					235						
Lys	Phe	Leu	Arg	Ser	Lys	Met	Asp	Ile	Pro	Asn	Thr	Phe	Gln	Ile	Asp						
245										250					255						
Val	Met	Tyr	Glu	Glu	Glu	Pro	Leu	Lys	Asp	Tyr	Tyr	Thr	Leu	Met	Asp						
260										265					270						
Ile	Ala	Tyr	Ile	Tyr	Thr	Trp	Arg	Arg	Asn	Gly	Pro	Leu	Pro	Leu	Lys						
275										280					285						
Tyr	Arg	Val	Arg	Pro	Thr	Cys	Lys	Arg	Met	Lys	Ile	Ser	His	Gln	Arg						
290										295					300						
Asp	Gly	Leu	Thr	Asn	Ala	Gly	Glu	Leu	Glu	Ser	Asp	Ser	Gly	Ser	Asp						
305										310					315						
Lys	Ala	Asn	Ser	Pro	Ala	Gly	Gly	Ile	Pro	Ser	Thr	Ser	Ser	Cys	Leu						
325										330					335						
Pro	Ser	Pro	Ser	Thr	Pro	Val	Gln	Ser	Pro	His	Pro	Gln	Phe	Pro	His						
340										345					350						
Ile	Ser	Ser	Thr	Met	Asn	Gly	Thr	Ser	Asn	Ser	Pro	Ser	Gly	Asn	His						

1317

355 360 365  
Gln Ser Ser Phe Ala Asn Arg Pro Arg Lys Ser Ser Val Asn Gly Ser  
370 375 380  
Ser Ala Thr Ser Ser Gly  
385 390

<210> 1285  
<211> 39  
<212> PRT  
<213> Homo sapiens

<400> 1285  
His Ala Ser Ala Gly Ser Gln Leu Phe Glu Met His Glu Lys Leu Ser  
1 5 10 15

Cys Met Ala Asn Ser Val Ile Lys Asn Leu Gln Ser Arg Trp Arg Ser  
20 25 30

Pro Ser His Glu Asn Ser Ile  
35

<210> 1286  
<211> 453  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (101)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (110)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (286)  
<223> Xaa equals any of the naturally occurring L-amino acids

1318

&lt;400&gt; 1286

Arg Arg Ser Val Ile Cys Asp Ser Asn Ala Thr Ala Leu Glu Leu Pro  
 1 5 10 15

Gly Leu Pro Leu Ser Leu Pro Gln Pro Ser Ile Pro Ala Ala Val Pro  
 20 25 30

Gln Ser Ala Pro Pro Xaa Pro His Arg Glu Glu Thr Val Thr Ala Thr  
 35 40 45

Ala Thr Ser Gln Val Ala Gln Gln Pro Pro Ala Ala Ala Ala Pro Gly  
 50 55 60

Glu Gln Ala Val Ala Gly Pro Ala Pro Arg Leu Ser Pro Ala Val Pro  
 65 70 75 80

Ala Lys Thr Ala Gln Cys Pro Ser Leu Ala Leu Trp Gly Ala Lys Arg  
 85 90 95

Ser Arg Arg Arg Xaa Lys Val Ala Ala Ala Ala Gln Ala Xaa Lys Glu  
 100 105 110

Pro Gln Glu Glu Arg Ser Gln Gln Gln Asp Asp Ile Glu Glu Leu Glu  
 115 120 125

Thr Lys Ala Val Gly Met Ser Asn Asp Gly Arg Phe Leu Lys Phe Asp  
 130 135 140

Ile Glu Ile Gly Arg Gly Ser Phe Lys Thr Val Tyr Lys Gly Leu Asp  
 145 150 155 160

Thr Glu Thr Thr Val Glu Val Ala Trp Cys Glu Leu Gln Asp Arg Lys  
 165 170 175

Leu Thr Lys Ser Glu Arg Gln Arg Phe Lys Glu Glu Ala Glu Met Leu  
 180 185 190

Lys Gly Leu Gln His Pro Asn Ile Val Arg Phe Tyr Asp Ser Trp Glu  
 195 200 205

Ser Thr Val Lys Gly Lys Lys Cys Ile Val Leu Val Thr Glu Leu Met  
 210 215 220

Thr Ser Gly Thr Leu Lys Thr Tyr Leu Lys Arg Phe Lys Val Met Lys  
 225 230 235 240

Ile Lys Val Leu Arg Ser Trp Cys Arg Gln Ile Leu Lys Gly Leu Gln  
 245 250 255

Phe Leu His Thr Arg Thr Pro Pro Ile Ile His Arg Asp Leu Lys Cys

1319

260	265	270
Asp Asn Ile Phe Ile Thr Gly Pro Thr Gly Ser Val Lys Xaa Gly Asp		
275	280	285
Leu Gly Leu Ala Thr Leu Lys Arg Ala Ser Phe Ala Lys Ser Val Ile		
290	295	300
Gly Thr Pro Glu Phe Met Ala Pro Glu Met Tyr Glu Glu Lys Tyr Asp		
305	310	315
Glu Ser Val Asp Val Tyr Ala Phe Gly Met Cys Met Leu Glu Met Ala		
325	330	335
Thr Ser Glu Tyr Pro Tyr Ser Glu Cys Gln Asn Ala Ala Gln Ile Tyr		
340	345	350
Arg Arg Val Thr Ser Gly Val Lys Pro Ala Ser Phe Asp Lys Val Ala		
355	360	365
Ile Pro Glu Val Lys Glu Ile Ile Glu Gly Cys Ile Arg Gln Asn Lys		
370	375	380
Asp Glu Arg Tyr Ser Ile Lys Asp Leu Leu Asn His Ala Phe Phe Gln		
385	390	395
Glu Glu Thr Gly Val Arg Val Glu Leu Ala Glu Glu Asp Asp Gly Glu		
405	410	415
Lys Ile Ala Ile Lys Leu Trp Leu Arg Ile Glu Asp Ile Lys Lys Leu		
420	425	430
Lys Gly Lys Tyr Lys Asp Lys Lys Lys Lys Lys Lys Lys Lys Lys		
435	440	445
Asn Thr His Arg Ala		
450		

&lt;210&gt; 1287

&lt;211&gt; 450

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1320

<221> SITE  
 <222> (41)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (43)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (116)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (193)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (314)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (326)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (344)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 1287  
 Ala Ala Glu Val Leu Cys Pro Ser Cys Phe Pro Ile Ser Pro Ala Pro  
   1                  5                  10                  15  
 Trp Met Thr Val Gly Pro Ala Ser Ala Leu Phe Pro Cys Gln Thr Pro  
                   20                  25                  30  
 Xaa Phe Pro Trp Thr Glu Trp Asn Xaa Trp Xaa Phe Thr Ala His Val  
                   35                  40                  45  
 Leu Ser Gln Lys Phe Glu Lys Glu Leu Ser Lys Val Arg Glu Tyr Val  
   50                  55                  60  
 Gln Leu Ile Ser Val Tyr Glu Lys Lys Leu Asn Leu Thr Val Arg  
   65                  70                  75                  80  
 Ile Asp Ile Met Glu Lys Asp Thr Ile Ser Tyr Thr Glu Leu Asp Phe

1321

85					90					95					
Glu	Leu	Ile	Lys	Val	Glu	Val	Lys	Glu	Met	Glu	Lys	Leu	Val	Ile	Gln
			100					105					110		
Leu	Lys	Glu	Xaa	Phe	Gly	Gly	Ser	Ser	Glu	Ile	Val	Asp	Gln	Leu	Glu
		115					120					125			
Val	Glu	Ile	Arg	Asn	Met	Thr	Leu	Leu	Val	Glu	Lys	Leu	Glu	Thr	Leu
	130					135					140				
Asp	Lys	Asn	Asn	Val	Leu	Ala	Ile	Arg	Arg	Glu	Ile	Val	Ala	Leu	Lys
145				150					155					160	
Thr	Lys	Leu	Lys	Glu	Cys	Glu	Ala	Ser	Lys	Asp	Gln	Asn	Thr	Pro	Val
			165						170					175	
Val	His	Pro	Pro	Pro	Thr	Pro	Gly	Ser	Cys	Gly	His	Gly	Gly	Val	Val
		180						185					190		
Xaa	Ile	Ser	Lys	Pro	Ser	Val	Val	Gln	Leu	Asn	Trp	Arg	Gly	Phe	Ser
	195						200					205			
Tyr	Leu	Tyr	Gly	Ala	Trp	Gly	Arg	Asp	Tyr	Ser	Pro	Gln	His	Pro	Asn
	210					215					220				
Lys	Gly	Leu	Tyr	Trp	Val	Ala	Pro	Leu	Asn	Thr	Asp	Gly	Arg	Leu	Leu
225				230					235					240	
Glu	Tyr	Tyr	Arg	Leu	Tyr	Asn	Thr	Leu	Asp	Asp	Leu	Leu	Leu	Tyr	Ile
			245					250						255	
Asn	Ala	Arg	Glu	Leu	Arg	Ile	Thr	Tyr	Gly	Gln	Gly	Ser	Gly	Thr	Ala
		260					265						270		
Val	Tyr	Asn	Asn	Asn	Met	Tyr	Val	Asn	Met	Tyr	Asn	Thr	Gly	Asn	Ile
	275					280						285			
Ala	Arg	Val	Asn	Leu	Thr	Thr	Asn	Thr	Ile	Ala	Val	Thr	Gln	Thr	Leu
	290					295					300				
Pro	Asn	Ala	Ala	Tyr	Asn	Asn	Arg	Phe	Xaa	Tyr	Ala	Asn	Val	Ala	Trp
305				310					315					320	
Gln	Asp	Ile	Asp	Phe	Xaa	Val	Asp	Glu	Asn	Gly	Leu	Trp	Val	Ile	Tyr
			325					330					335		
Ser	Thr	Glu	Ala	Ser	Thr	Gly	Xaa	Met	Val	Ile	Ser	Lys	Leu	Asn	Asp
		340					345					350			
Thr	Thr	Leu	Gln	Val	Leu	Asn	Thr	Trp	Tyr	Thr	Lys	Gln	Tyr	Lys	Pro



1322

355                      360                      365  
 Ser Ala Ser Asn Ala Phe Met Val Cys Gly Val Leu Tyr Ala Thr Arg  
 370                      375                      380  
 Thr Met Asn Thr Arg Thr Glu Glu Ile Phe Tyr Tyr Tyr Asp Thr Asn  
 385                      390                      395                      400  
 Thr Gly Lys Glu Gly Lys Leu Asp Ile Val Met His Lys Met Gln Glu  
 405                      410                      415  
 Lys Val Gln Ser Ile Asn Tyr Asn Pro Phe Asp Gln Lys Leu Tyr Val  
 420                      425                      430  
 Tyr Asn Asp Gly Tyr Leu Leu Asn Tyr Asp Leu Ser Val Leu Gln Lys  
 435                      440                      445  
 Pro Gln  
 450

&lt;210&gt; 1288

&lt;211&gt; 164

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1288

Leu Gln Gln Ala Leu Pro Asn Asn Gly Leu Leu Phe Thr Trp Thr Leu  
 1                      5                      10                      15  
 Ser Lys Glu Gly Gly Arg Glu Gly Gln Ser Gly Val Ser Phe Gln His  
 20                      25                      30  
 Ser Ser Gln Lys Gly Glu Arg Phe Ser Gly Trp Cys His Ala Ile Gly  
 35                      40                      45  
 Ile Lys Gln Glu Ala His Gly Trp Leu Leu Asn Glu Glu Gln Asn Leu  
 50                      55                      60  
 Gly Ala Leu Trp Leu Thr Thr Ala Ile Cys Gly Ala Gly Thr His Thr  
 65                      70                      75                      80  
 Ser Arg Gln Leu Gln Phe Cys Thr Phe Ser Leu Leu Asp Ser Lys Ser  
 85                      90                      95  
 Arg Cys Cys Leu Ala Ala Leu Arg Gly His Ser Leu Leu Arg Arg Ala  
 100                      105                      110  
 Leu Gln Ser Pro Ala Pro Gly Leu Gly Glu Trp Met Arg Leu Leu Pro  
 115                      120                      125

1323

Tyr Asp Thr Cys Gln Asp Ala Leu Pro Pro Pro Leu Lys Val Gly Pro  
 130 135 140

Gly Gln His Cys Ser Leu Leu Ser Ala Phe Ser Gly Leu Arg Ser Gln  
 145 150 155 160

Tyr Glu Leu Pro

<210> 1289

<211> 40

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (6)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (30)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1289

Trp Met Ser Glu Tyr Xaa Gln Trp Val Phe Leu Ile Ser Leu Arg Ile  
 1 5 10 15

Cys Leu Arg Val His Tyr Gln Gly Ile Ser Gly Thr Arg Xaa His Ser  
 20 25 30

Leu His Gln Phe Leu Arg Val Leu  
 35 40

<210> 1290

<211> 266

<212> PRT

<213> Homo sapiens

<400> 1290

Asp Ile Met Glu Ser Gly Phe Thr Ser Lys Asp Thr Tyr Leu Ser His  
 1 5 10 15

Phe Asn Pro Arg Asp Tyr Leu Glu Lys Tyr Tyr Lys Phe Gly Ser Arg  
 20 25 30

1324

His Ser Ala Glu Ser Gln Ile Leu Lys His Leu Leu Lys Asn Leu Phe  
                   35                                  40                                  45  
 Lys Ile Phe Cys Leu Asp Gly Val Lys Gly Asp Leu Leu Ile Asp Ile  
           50                                  55                                  60  
 Gly Ser Gly Pro Thr Ile Tyr Gln Leu Leu Ser Ala Cys Glu Ser Phe  
   65                                  70                                  75                                  80  
 Lys Glu Ile Val Val Thr Asp Tyr Ser Asp Gln Asn Leu Gln Glu Leu  
                                   85                                  90                                  95  
 Glu Lys Trp Leu Lys Lys Glu Pro Glu Ala Phe Asp Trp Ser Pro Val  
                   100                                  105                                  110  
 Val Thr Tyr Val Cys Asp Leu Glu Gly Asn Arg Val Lys Gly Pro Glu  
           115                                  120                                  125  
 Lys Glu Glu Lys Leu Arg Gln Ala Val Lys Gln Val Leu Lys Cys Asp  
   130                                  135                                  140  
 Val Thr Gln Ser Gln Pro Leu Gly Ala Val Pro Leu Pro Pro Ala Asp  
 145                                  150                                  155                                  160  
 Cys Val Leu Ser Thr Leu Cys Leu Asp Ala Ala Cys Pro Asp Leu Pro  
                   165                                  170                                  175  
 Thr Tyr Cys Arg Ala Leu Arg Asn Leu Gly Ser Leu Leu Lys Pro Gly  
           180                                  185                                  190  
 Gly Phe Leu Val Ile Met Asp Ala Leu Lys Ser Ser Tyr Tyr Met Ile  
   195                                  200                                  205  
 Gly Glu Gln Lys Phe Ser Ser Leu Pro Leu Gly Arg Glu Ala Val Glu  
   210                                  215                                  220  
 Ala Ala Val Lys Glu Ala Gly Tyr Thr Ile Glu Trp Phe Glu Val Ile  
 225                                  230                                  235                                  240  
 Ser Gln Ser Tyr Ser Ser Thr Met Ala Asn Asn Glu Gly Leu Phe Ser  
           245                                  250                                  255  
 Leu Val Ala Arg Lys Leu Ser Arg Pro Leu  
           260                                  265

&lt;210&gt; 1291

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1325

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (55)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1291

Cys Gly Ser Thr Ile Leu Gln Gly Pro Gln Lys Ala Leu Arg Arg Gly  
 1 5 10 15

Leu Gly Glu Val Gly Asp Gln Gly Lys Ser Arg Gln Arg Ala Ser Lys  
 20 25 30

Arg Leu Phe Ala Ser Lys Ala Leu Arg Gly His Leu Arg Pro Val Arg  
 35 40 45

Gly Gln Gln Pro Gly Arg Xaa Gly Ser Asp Glu Asn Glu Glu Ser Ser  
 50 55 60

Val Val Asp Tyr Val Glu Val Thr Val Gly Glu Glu Asp Ala Ile Ser  
 65 70 75 80

Asp Arg Ser Asp Ser Trp Ser Gln Ala Ala Ala Glu Gly Val Ser Glu  
 85 90 95

Leu Ala Glu Ser Asp Ser Asp Cys Val Pro Ala Glu Ala Gly Gln Ala  
 100 105 110

&lt;210&gt; 1292

&lt;211&gt; 217

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1292

Gly Ser Thr His Ala Ser Gly Thr Met Arg Ala Ala Ala Ile Ser Thr  
 1 5 10 15

Pro Lys Leu Asp Lys Met Pro Gly Met Phe Phe Ser Ala Asn Pro Lys  
 20 25 30

Glu Leu Lys Gly Thr Thr His Ser Leu Leu Asp Asp Lys Met Gln Lys  
 35 40 45

Arg Arg Pro Lys Thr Phe Gly Met Asp Met Lys Ala Tyr Leu Arg Ser  
 50 55 60

1326

Met Ile Pro His Leu Glu Ser Gly Met Lys Ser Ser Lys Ser Lys Asp  
 65 70 75 80  
 Val Leu Ser Ala Ala Glu Val Met Gln Trp Ser Gln Ser Leu Glu Lys  
 85 90 95  
 Leu Leu Ala Asn Gln Thr Gly Gln Asn Val Phe Gly Ser Phe Leu Lys  
 100 105 110  
 Ser Glu Phe Ser Glu Glu Asn Ile Glu Phe Trp Leu Ala Cys Glu Asp  
 115 120 125  
 Tyr Lys Lys Thr Glu Ser Asp Leu Leu Pro Cys Lys Ala Glu Glu Ile  
 130 135 140  
 Tyr Lys Ala Phe Val His Ser Asp Ala Ala Lys Gln Ile Asn Ile Asp  
 145 150 155 160  
 Phe Arg Thr Arg Glu Ser Thr Ala Lys Lys Ile Lys Ala Pro Thr Pro  
 165 170 175  
 Thr Cys Phe Asp Glu Ala Gln Lys Val Ile Tyr Thr Leu Met Glu Lys  
 180 185 190  
 Asp Ser Tyr Pro Arg Phe Leu Lys Ser Asp Ile Tyr Leu Asn Leu Leu  
 195 200 205  
 Asn Asp Leu Gln Ala Asn Ser Leu Lys  
 210 215

&lt;210&gt; 1293

&lt;211&gt; 235

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (229)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1293

Leu His Leu Leu Ala Val Leu Glu Lys Met Ile Ser Gln Gly Asn Asn  
 1 5 10 15  
 Asn Lys Asn Gly Lys Asn Glu Thr Gly Asn Asn Asn Asn Lys Asp Gly  
 20 25 30  
 Ser Asn His Lys Ala Glu Ser Gly Ala Leu Ile Glu Ala Ala Lys Ser  
 35 40 45

1327

Lys Ile His Gln Tyr Lys Val Arg Ala Tyr Ile Gln Met Lys Ser Leu  
 50 55 60  
 Lys Ala Cys Lys Arg Glu Ile Lys Ser Val Met Asn Thr Ala Gly Asn  
 65 70 75 80  
 Ser Ala Pro Ser Leu Phe Leu Lys Ser Asn Phe Glu Tyr Leu Arg Gly  
 85 90 95  
 Asn Tyr Arg Lys Ala Val Lys Leu Leu Asn Ser Ser Asn Ile Ala Glu  
 100 105 110  
 His Pro Gly Phe Met Lys Thr Gly Glu Cys Leu Arg Cys Met Phe Trp  
 115 120 125  
 Asn Asn Leu Gly Cys Ile His Phe Ala Met Ser Lys His Asn Leu Gly  
 130 135 140  
 Ile Phe Tyr Phe Lys Lys Ala Leu Gln Glu Asn Asp Asn Val Cys Ala  
 145 150 155 160  
 Gln Leu Ser Ala Gly Ser Thr Asp Pro Gly Lys Lys Phe Ser Gly Arg  
 165 170 175  
 Pro Met Cys Thr Leu Leu Thr Asn Lys Arg Tyr Glu Leu Leu Tyr Asn  
 180 185 190  
 Cys Gly Ile Gln Leu Leu His Ile Gly Arg Pro Leu Ala Ala Phe Glu  
 195 200 205  
 Cys Leu Ile Glu Ala Val Gln Val Tyr His Ala Asn Pro Arg Leu Trp  
 210 215 220  
 Leu Arg Leu Ala Xaa Met Leu His Cys Cys Gln  
 225 230 235

&lt;210&gt; 1294

&lt;211&gt; 275

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (23)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1328

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (50)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1294

Ala Arg Gly Ala Arg Gly Arg Ala Leu Pro Ala Ser Gly Lys Ala Gly  
 1 5 10 15

Arg Ala Arg Gly Ser Ala Xaa Gly Ser Ala Ala Arg Gly His Trp Ser  
 20 25 30

Leu Ala Arg Phe Pro Ala Pro Arg Gly Ser His Leu Pro Ala Arg Arg  
 35 40 45

Xaa Xaa Gly Arg Val Ser Thr Pro Ile Leu Arg Pro Val Ser Ser Ile  
 50 55 60

Pro Leu Ala Leu Ser Arg Glu Ser Arg Thr Ala Glu Glu Ser Ser Leu  
 65 70 75 80

Thr Pro Gln Pro Gln Val Gly Leu Val His Ile Met Thr Ser Phe Glu  
 85 90 95

Asp Ala Asp Thr Glu Glu Thr Val Thr Cys Leu Gln Met Thr Val Tyr  
 100 105 110

His Pro Gly Gln Leu Gln Cys Gly Ile Phe Gln Ser Ile Ser Phe Asn  
 115 120 125

Arg Glu Lys Leu Pro Ser Ser Glu Val Val Lys Phe Gly Arg Asn Ser  
 130 135 140

Asn Ile Cys His Tyr Thr Phe Gln Asp Lys Gln Val Ser Arg Val Gln  
 145 150 155 160

Phe Ser Leu Gln Leu Phe Lys Lys Phe Asn Ser Ser Val Leu Ser Phe  
 165 170 175

Glu Ile Lys Asn Met Ser Lys Lys Thr Asn Leu Ile Val Asp Ser Arg  
 180 185 190

Glu Leu Gly Tyr Leu Asn Lys Met Asp Leu Pro Tyr Arg Cys Met Val  
 195 200 205

Arg Phe Gly Glu Tyr Gln Phe Leu Met Glu Lys Glu Asp Gly Glu Ser  
 210 215 220

1329

[illegible]

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<210> 1295
<211> 677
<212> PRT
<213> Homo sapiens
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<220>
<221> SITE
<222> (144)
<223> Xaa equals any of the naturally occurring L-amino acids
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<220>
<221> SITE
<222> (161)
<223> xaa equals any of the naturally occurring L-amino acids
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<400> 1295
Met Thr Arg Leu Pro Lys Leu Trp Ala Arg Pro Ala Gly Lys Ala Leu
  1                      5                      10                      15

Val Ser Pro Val Val Gln Asn Ile Thr Ser Pro Asp Glu Asp Gly Ile
      20                      25                      30

Ser Pro Leu Gly Trp Leu Leu Asp Gln Tyr Leu Glu Cys Gln Glu Ala
      35                      40                      45

Val Phe Asn Pro Gln Ser Arg Gly Pro Ala Phe Phe Ser Arg Val Arg
      50                      55                      60

Arg Leu Thr His Leu Leu Val His Val Glu Pro Cys Glu Ala Pro Pro
  65                      70                      75                      80

Pro Val Val Ala Thr Pro Arg Pro Lys Gly Arg Asn Arg Ser His Asp
      85                      90                      95

Trp Ser Ser Leu Ala Thr Arg Gly Leu Pro Ser Ser Ile Met Arg Asn
    100                      105                      110

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1330

Leu Thr Arg Cys Trp Arg Ala Val Val Glu Lys Gln Val Asn Asn Phe		
115	120	125
Leu Thr Ser Ser Trp Arg Asp Asp Asp Phe Val Pro Arg Tyr Cys Xaa		
130	135	140
His Phe Asn Ile Leu Gln Asn Ser Ser Ser Glu Leu Phe Gly Pro Arg		
145	150	155 160
Xaa Ala Phe Leu Leu Ala Leu Gln Asn Gly Cys Ala Gly Ala Leu Leu		
	165	170 175
Lys Leu Pro Phe Leu Lys Ala Ala His Val Ser Glu Gln Phe Ala Arg		
	180	185 190
His Ile Asp Gln Gln Ile Gln Gly Ser Arg Ile Gly Gly Ala Gln Glu		
	195	200 205
Met Glu Arg Leu Ala Gln Leu Gln Gln Cys Leu Gln Ala Val Leu Ile		
	210	215 220
Phe Ser Gly Leu Glu Ile Ala Thr Thr Phe Glu His Tyr Tyr Gln His		
	225	230 235 240
Tyr Met Ala Asp Arg Leu Leu Gly Val Val Ser Ser Trp Leu Glu Gly		
	245	250 255
Ala Val Leu Glu Gln Ile Gly Pro Cys Phe Pro Asn Arg Leu Pro Gln		
	260	265 270
Gln Met Leu Gln Ser Leu Ser Thr Ser Lys Glu Leu Gln Arg Gln Phe		
	275	280 285
His Val Tyr Gln Leu Gln Gln Leu Asp Gln Glu Leu Leu Lys Leu Glu		
	290	295 300
Asp Thr Glu Lys Lys Ile Gln Val Gly Leu Gly Ala Ser Gly Lys Glu		
	305	310 315 320
His Lys Ser Glu Lys Glu Glu Glu Ala Gly Ala Ala Ala Val Val Asp		
	325	330 335
Val Ala Glu Gly Glu Glu Glu Glu Glu Glu Asn Glu Asp Leu Tyr Tyr		
	340	345 350
Glu Gly Ala Met Pro Glu Val Ser Val Leu Val Leu Ser Arg His Ser		
	355	360 365
Trp Pro Val Ala Ser Ile Cys His Thr Leu Asn Pro Arg Thr Cys Leu		
	370	375 380

1331

Pro Ser Tyr Leu Arg Gly Thr Leu Asn Arg Tyr Ser Asn Phe Tyr Asn  
 385 390 395 400  
 Lys Ser Gln Ser His Pro Ala Leu Glu Arg Gly Ser Gln Arg Arg Leu  
 405 410 415  
 Gln Trp Thr Trp Leu Gly Trp Ala Glu Leu Gln Phe Gly Asn Gln Thr  
 420 425 430  
 Leu His Val Ser Thr Val Gln Met Trp Leu Leu Leu Tyr Leu Asn Asp  
 435 440 445  
 Leu Lys Ala Val Ser Val Glu Ser Leu Leu Ala Phe Ser Gly Leu Ser  
 450 455 460  
 Ala Asp Met Leu Asn Gln Ala Ile Gly Pro Leu Thr Ser Ser Arg Gly  
 465 470 475 480  
 Pro Leu Asp Leu His Glu Gln Lys Asp Ile Pro Gly Gly Val Leu Lys  
 485 490 495  
 Ile Arg Asp Gly Ser Lys Glu Pro Arg Ser Arg Trp Asp Ile Val Arg  
 500 505 510  
 Leu Ile Pro Pro Gln Thr Tyr Leu Gln Ala Glu Gly Glu Asp Gly Gln  
 515 520 525  
 Asn Leu Glu Lys Arg Arg Asn Leu Leu Asn Cys Leu Ile Val Arg Ile  
 530 535 540  
 Leu Lys Ala His Gly Asp Glu Gly Leu His Ile Asp Gln Leu Val Cys  
 545 550 555 560  
 Leu Val Leu Glu Ala Trp Gln Lys Gly Pro Cys Pro Pro Arg Gly Leu  
 565 570 575  
 Val Ser Ser Leu Gly Lys Gly Ser Ala Cys Ser Ser Thr Asp Val Leu  
 580 585 590  
 Ser Cys Ile Leu His Leu Leu Gly Lys Gly Thr Leu Arg Arg His Asp  
 595 600 605  
 Asp Arg Pro Gln Val Leu Ser Tyr Ala Val Pro Val Thr Val Met Glu  
 610 615 620  
 Pro His Thr Glu Ser Leu Asn Pro Gly Ser Ser Gly Pro Asn Pro Pro  
 625 630 635 640  
 Leu Thr Phe His Thr Leu Gln Ile Arg Ser Arg Gly Val Pro Tyr Ala  
 645 650 655

1332

Ser Cys Thr Ala Thr Gln Ser Phe Ser Thr Ser Gly Ser Pro Arg Leu  
                   660                  665                  670

Gly Val Arg Gly Arg  
                   675

&lt;210&gt; 1296

&lt;211&gt; 578

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1296

Gly Thr Arg Glu Gly Ala Arg Val Gly Gly Ala Arg Gly Gly Arg Asp  
   1                  5                  10                  15

Gly Arg Lys Met Ala Thr Ala Thr Ile Ala Leu Gln Val Asn Gly Gln  
                   20                  25                  30

Gln Gly Gly Gly Ser Glu Pro Ala Ala Ala Ala Val Val Ala Ala  
                   35                  40                  45

Gly Asp Lys Trp Lys Pro Pro Gln Gly Thr Asp Ser Ile Lys Met Glu  
                   50                  55                  60

Asn Gly Gln Ser Thr Ala Ala Lys Leu Gly Leu Pro Pro Leu Thr Pro  
   65                  70                  75                  80

Glu Gln Gln Glu Ala Leu Gln Lys Ala Lys Lys Tyr Ala Met Glu Gln  
                   85                  90                  95

Ser Ile Lys Ser Val Leu Val Lys Gln Thr Ile Ala His Gln Gln Gln  
                   100                  105                  110

Gln Leu Thr Asn Leu Gln Met Ala Ala Val Thr Met Gly Phe Gly Asp  
                   115                  120                  125

Pro Leu Ser Pro Leu Gln Ser Met Ala Ala Gln Arg Gln Arg Ala Leu  
                   130                  135                  140

Ala Ile Met Cys Arg Val Tyr Val Gly Ser Ile Tyr Tyr Glu Leu Gly  
   145                  150                  155                  160

Glu Asp Thr Ile Arg Gln Ala Phe Ala Pro Phe Gly Pro Ile Lys Ser  
                   165                  170                  175

Ile Asp Met Ser Trp Asp Ser Val Thr Met Lys His Lys Gly Phe Ala  
                   180                  185                  190

Phe Val Glu Tyr Glu Val Pro Glu Ala Ala Gln Leu Ala Leu Glu Gln

1333

195	200	205
Met Asn Ser Val Met Leu Gly Gly Arg Asn Ile Lys Val Gly Arg Pro		
210	215	220
Ser Asn Ile Gly Gln Ala Gln Pro Ile Ile Asp Gln Leu Ala Glu Glu		
225	230	235 240
Ala Arg Ala Phe Asn Arg Ile Tyr Val Ala Ser Val His Gln Asp Leu		
	245	250 255
Ser Asp Asp Asp Ile Lys Ser Val Phe Glu Ala Phe Gly Lys Ile Lys		
	260	265 270
Ser Cys Thr Leu Ala Arg Asp Pro Thr Thr Gly Lys His Lys Gly Tyr		
	275	280 285
Gly Phe Ile Glu Tyr Glu Lys Ala Gln Ser Ser Gln Asp Ala Val Ser		
	290	295 300
Ser Met Asn Leu Phe Asp Leu Gly Gly Gln Tyr Leu Arg Val Gly Lys		
305	310	315 320
Ala Val Thr Pro Pro Met Pro Leu Leu Thr Pro Ala Thr Pro Gly Gly		
	325	330 335
Leu Pro Pro Ala Ala Ala Val Ala Ala Ala Ala Ala Thr Ala Lys Ile		
	340	345 350
Thr Ala Gln Glu Ala Val Ala Gly Ala Ala Val Leu Gly Thr Leu Gly		
	355	360 365
Thr Pro Gly Leu Val Ser Pro Ala Leu Thr Leu Ala Gln Pro Leu Gly		
	370	375 380
Thr Leu Pro Gln Ala Val Met Ala Ala Gln Ala Pro Gly Val Ile Thr		
385	390	395 400
Gly Val Thr Pro Ala Arg Pro Pro Ile Pro Val Thr Ile Pro Ser Val		
	405	410 415
Gly Val Val Asn Pro Ile Leu Ala Ser Pro Pro Thr Leu Gly Leu Leu		
	420	425 430
Glu Pro Lys Lys Glu Lys Glu Glu Glu Glu Leu Phe Pro Glu Ser Glu		
	435	440 445
Arg Pro Glu Met Leu Ser Glu Gln Glu His Met Ser Ile Ser Gly Ser		
	450	455 460
Ser Ala Arg His Met Val Met Gln Lys Leu Leu Arg Lys Gln Glu Ser		

1334

465                      470                      475                      480  
 Thr Val Met Val Leu Arg Asn Met Val Asp Pro Lys Asp Ile Asp Asp  
                                  485                      490                      495  
 Asp Leu Glu Gly Glu Val Thr Glu Glu Cys Gly Lys Phe Gly Ala Val  
                                  500                      505                      510  
 Asn Arg Val Ile Ile Tyr Gln Glu Lys Gln Gly Glu Glu Glu Asp Ala  
                                  515                      520                      525  
 Glu Ile Ile Val Lys Ile Phe Val Glu Phe Ser Ile Ala Ser Glu Thr  
                                  530                      535                      540  
 His Lys Ala Ile Gln Ala Leu Asn Gly Arg Trp Phe Ala Gly Arg Lys  
 545                                   550                                   555                                   560  
 Val Val Ala Glu Val Tyr Asp Gln Glu Arg Phe Asp Asn Ser Asp Leu  
                                  565                                   570                                   575  
 Ser Ala

&lt;210&gt; 1297

&lt;211&gt; 179

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1297

Pro Arg Gly Thr Ser Arg Arg Ser Ala Trp Pro Lys Met Ala Ala Ser  
 1                                      5                                      10                                      15  
 Val Cys Ser Gly Leu Leu Gly Pro Arg Val Leu Ser Trp Ser Arg Glu  
                                  20                                      25                                      30  
 Leu Pro Cys Ala Trp Arg Ala Leu His Thr Ser Pro Val Cys Ala Lys  
                                  35                                      40                                      45  
 Asn Arg Ala Ala Arg Val Arg Val Ser Lys Gly Asp Lys Pro Val Thr  
                                  50                                      55                                      60  
 Tyr Glu Glu Ala His Ala Pro His Tyr Ile Ala His Arg Lys Gly Trp  
 65                                      70                                      75                                      80  
 Leu Ser Leu His Thr Gly Asn Leu Asp Gly Glu Asp His Ala Ala Glu  
                                  85                                      90                                      95  
 Arg Thr Val Glu Asp Val Phe Leu Arg Lys Phe Met Trp Gly Thr Phe  
                                  100                                      105                                      110

1335

Pro Gly Cys Leu Ala Asp Gln Leu Val Leu Lys Arg Arg Gly Asn Gln  
 115 120 125

Leu Glu Ile Cys Ala Val Val Leu Arg Gln Leu Ser Pro His Lys Tyr  
 130 135 140

Tyr Phe Leu Val Gly Tyr Ser Glu Thr Leu Leu Ser Tyr Phe Tyr Lys  
 145 150 155 160

Cys Pro Val Arg Leu His Leu Gln Thr Val Pro Ser Lys Val Val Tyr  
 165 170 175

Lys Tyr Leu

&lt;210&gt; 1298

&lt;211&gt; 155

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1298

Gly Leu Val Thr Ile Phe Gly Cys Pro Ser Arg Glu Lys Gly Arg Met  
 1 5 10 15

Pro Leu Glu Ser Ser Ser Ser Met Pro Leu Ser Phe Pro Ser Leu Leu  
 20 25 30

Pro Ser Val Pro His Asn Thr Asn Pro Ser Pro Pro Leu Met Ser Tyr  
 35 40 45

Ile Thr Ser Gln Glu Met Lys Cys Ile Leu His Trp Phe Ala Asn Trp  
 50 55 60

Ser Gly Pro Gln Arg Glu Arg Phe Leu Glu Asp Leu Val Ala Lys Ala  
 65 70 75 80

Val Pro Glu Lys Leu Gln Pro Leu Leu Asp Ser Leu Glu Gln Leu Ser  
 85 90 95

Val Ser Gly Ala Asp Arg Pro Pro Ser Ile Phe Glu Cys Gln Leu His  
 100 105 110

Leu Trp Asp Gln Trp Phe Arg Gly Trp Ala Glu Gln Glu Arg Asn Glu  
 115 120 125

Phe Val Arg Gln Leu Glu Phe Ser Glu Pro Asp Phe Val Ala Lys Phe  
 130 135 140

1336

Tyr Gln Ala Val Ala Ala Thr Ala Gly Lys Asp  
 145 150 155

<210> 1299

<211> 449

<212> PRT

<213> Homo sapiens

<400> 1299

Ser Asn Arg Lys Phe Ile Pro His Gln Leu Leu Val Ala Ile Asp Leu  
 1 5 10 15

Leu Ala Arg Gln Ala Val Arg Tyr Ile Asn Glu Asn Leu Ile Val Asn  
 20 25 30

Thr Asp Glu Leu Gly Arg Asp Cys Leu Ile Asn Ala Ala Lys Thr Ser  
 35 40 45

Met Ser Ser Lys Ile Ile Gly Ile Asn Gly Asp Phe Phe Ala Asn Met  
 50 55 60

Val Val Asp Ala Val Leu Ala Ile Lys Tyr Thr Asp Ile Arg Gly Gln  
 65 70 75 80

Pro Arg Tyr Pro Val Asn Ser Val Asn Ile Leu Lys Ala His Gly Arg  
 85 90 95

Ser Gln Met Glu Ser Met Leu Ile Ser Gly Tyr Ala Leu Asn Cys Val  
 100 105 110

Val Gly Ser Gln Gly Met Pro Lys Arg Ile Val Asn Ala Lys Ile Ala  
 115 120 125

Cys Leu Asp Phe Ser Leu Gln Lys Thr Lys Met Lys Leu Gly Val Gln  
 130 135 140

Val Val Ile Thr Asp Pro Glu Lys Leu Asp Gln Ile Arg Gln Arg Glu  
 145 150 155 160

Ser Asp Ile Thr Lys Glu Arg Ile Gln Lys Ile Leu Ala Thr Gly Ala  
 165 170 175

Asn Val Ile Leu Thr Thr Gly Gly Ile Asp Asp Met Cys Leu Lys Tyr  
 180 185 190

Phe Val Glu Ala Gly Ala Met Ala Val Arg Arg Val Leu Lys Arg Asp  
 195 200 205

Leu Lys Arg Ile Ala Lys Ala Ser Gly Ala Thr Ile Leu Ser Thr Leu

1337

210	215	220
Ala Asn Leu Glu Gly Glu Glu Thr Phe Glu Ala Ala Met Leu Gly Gln		
225	230	235 240
Ala Glu Glu Val Val Gln Glu Arg Ile Cys Asp Asp Glu Leu Ile Leu		
	245	250 255
Ile Lys Asn Thr Lys Ala Arg Thr Ser Ala Ser Ile Ile Leu Arg Gly		
	260	265 270
Ala Asn Asp Phe Met Cys Asp Glu Met Glu Arg Ser Leu His Asp Ala		
	275	280 285
Leu Cys Val Val Lys Arg Val Leu Glu Ser Lys Ser Val Val Pro Gly		
	290	295 300
Gly Gly Ala Val Glu Ala Ala Leu Ser Ile Tyr Leu Glu Asn Tyr Ala		
	310	315 320
Thr Ser Met Gly Ser Arg Glu Gln Leu Ala Ile Ala Glu Phe Ala Arg		
	325	330 335
Ser Leu Leu Val Ile Pro Asn Thr Leu Ala Val Asn Ala Ala Gln Asp		
	340	345 350
Ser Thr Asp Leu Val Ala Lys Leu Arg Ala Phe His Asn Glu Ala Gln		
	355	360 365
Val Asn Pro Glu Arg Lys Asn Leu Lys Trp Ile Gly Leu Asp Leu Ser		
	370	375 380
Asn Gly Lys Pro Arg Asp Asn Lys Gln Ala Gly Val Phe Glu Pro Thr		
	385	390 395 400
Ile Val Lys Val Lys Ser Leu Lys Phe Ala Thr Glu Ala Ala Ile Thr		
	405	410 415
Ile Leu Arg Ile Asp Asp Leu Ile Lys Leu His Pro Glu Ser Lys Asp		
	420	425 430
Asp Lys His Gly Ser Tyr Glu Asp Ala Val His Ser Gly Ala Leu Asn		
	435	440 445

Asp

&lt;210&gt; 1300

&lt;211&gt; 96



1338

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1300

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Leu Met Phe Tyr Val Leu Phe Trp Thr Leu Ser Ser Cys Lys Asn Phe
 1              5              10              15

Tyr Lys Asn Cys Phe Leu His Pro Cys Gly Ala Tyr Ser Ser Glu Pro
          20              25              30

Ser Pro Gln Ser Gln Cys Leu Cys Phe Leu Phe Tyr Phe Cys Ser Ile
          35              40              45

Arg Phe Leu Leu Leu Leu Cys Leu Lys Ser Ser Leu Gly Ser Tyr Gln
 50              55              60

Gly Phe Ser Phe Cys Val Ala Phe Ala Ala Trp Ile Lys His Trp Leu
 65              70              75              80

Thr Val Leu Met Cys Glu Glu Lys Lys Phe Ser Lys Ala Gly Glu Leu
          85              90              95

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&lt;210&gt; 1301

&lt;211&gt; 332

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1301

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Gly Glu Pro Lys Met Thr Gly Ser Asn Glu Phe Lys Leu Asn Gln Pro
 1              5              10              15

Pro Glu Asp Gly Ile Ser Ser Val Lys Phe Ser Pro Asn Thr Ser Gln
          20              25              30

Phe Leu Leu Val Ser Ser Trp Asp Thr Ser Val Arg Leu Tyr Asp Val
          35              40              45

Pro Ala Asn Ser Met Arg Leu Lys Tyr Gln His Thr Gly Ala Val Leu
          50              55              60

Asp Cys Ala Phe Tyr Asp Pro Thr His Ala Trp Ser Gly Gly Leu Asp
          65              70              75              80

His Gln Leu Lys Met His Asp Leu Asn Thr Asp Gln Glu Asn Leu Val
          85              90              95

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1339

Gly Thr His Asp Ala Pro Ile Arg Cys Val Glu Tyr Cys Pro Glu Val  
                   100                  105                  110  
 Asn Val Met Val Thr Gly Ser Trp Asp Gln Thr Val Lys Leu Trp Asp  
                   115                  120                  125  
 Pro Arg Thr Pro Cys Asn Ala Gly Thr Phe Ser Gln Pro Glu Lys Val  
                   130                  135                  140  
 Tyr Thr Leu Ser Val Ser Gly Asp Arg Leu Ile Val Gly Thr Ala Gly  
 145                                  150                  155                  160  
 Arg Arg Val Leu Val Trp Asp Leu Arg Asn Met Gly Tyr Val Gln Gln  
                                   165                  170                  175  
 Arg Arg Glu Ser Ser Leu Lys Tyr Gln Thr Arg Cys Ile Arg Ala Phe  
                                   180                  185                  190  
 Pro Asn Lys Gln Gly Tyr Val Leu Ser Ser Ile Glu Gly Arg Val Ala  
                   195                  200                  205  
 Val Glu Tyr Leu Asp Pro Ser Pro Glu Val Gln Lys Lys Lys Tyr Ala  
                   210                  215                  220  
 Phe Lys Cys His Arg Leu Lys Glu Asn Asn Ile Glu Gln Ile Tyr Pro  
 225                                  230                  235                  240  
 Val Asn Ala Ile Ser Phe His Asn Ile His Asn Thr Phe Ala Thr Gly  
                                   245                  250                  255  
 Gly Ser Asp Gly Phe Val Asn Ile Trp Asp Pro Phe Asn Lys Lys Arg  
                   260                  265                  270  
 Leu Cys Gln Phe His Arg Tyr Pro Thr Ser Ile Ala Ser Leu Ala Phe  
                   275                  280                  285  
 Ser Asn Asp Gly Thr Thr Leu Ala Ile Ala Ser Ser Tyr Met Tyr Glu  
                   290                  295                  300  
 Met Asp Asp Thr Glu His Pro Glu Asp Gly Ile Phe Ile Arg Gln Val  
 305                                  310                  315                  320  
 Thr Asp Ala Glu Thr Lys Pro Lys Ser Pro Cys Thr  
                   325                  330

&lt;210&gt; 1302

&lt;211&gt; 565

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1340

&lt;400&gt; 1302

Leu His Cys Thr Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp  
 1 5 10 15

Cys Leu Ser Val Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly  
 20 25 30

Pro Asp Ala Phe Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys  
 35 40 45

Phe Gly Phe His Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln  
 50 55 60

Pro Ile Arg Val Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly  
 65 70 75 80

Glu Ile Tyr Asn His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr  
 85 90 95

Gln Thr Lys Val Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly  
 100 105 110

Gly Ile Glu Gln Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val  
 115 120 125

Leu Leu Asp Thr Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr  
 130 135 140

Gly Val Arg Pro Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala  
 145 150 155 160

Val Cys Ser Glu Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr  
 165 170 175

Pro Phe Leu Lys Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu  
 180 185 190

Asp Leu Lys Pro Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr  
 195 200 205

His His Cys Arg Asp Glu Pro Leu His Ala Leu Tyr Asp Asn Val Glu  
 210 215 220

Lys Leu Phe Pro Gly Phe Glu Ile Glu Thr Val Lys Asn Asn Leu Arg  
 225 230 235 240

Ile Leu Phe Asn Asn Ala Val Lys Lys Arg Leu Met Thr Asp Arg Arg  
 245 250 255

Ile Gly Cys Leu Leu Ser Gly Gly Leu Asp Ser Ser Leu Val Ala Ala

1341

260	265	270
Thr Leu Leu Lys Gln Leu Lys Glu Ala Gln Val Gln Tyr Pro Leu Gln		
275	280	285
Thr Phe Ala Ile Gly Met Glu Asp Ser Pro Asp Leu Leu Ala Ala Arg		
290	295	300
Lys Val Ala Asp His Ile Gly Ser Glu His Tyr Glu Val Leu Phe Asn		
305	310	315
Ser Glu Glu Gly Ile Gln Ala Leu Asp Glu Val Ile Phe Ser Leu Glu		
325	330	335
Thr Tyr Asp Ile Thr Thr Val Arg Ala Ser Val Gly Met Tyr Leu Ile		
340	345	350
Ser Lys Tyr Ile Arg Lys Asn Thr Asp Ser Val Val Ile Phe Ser Gly		
355	360	365
Glu Gly Ser Asp Glu Leu Thr Gln Gly Tyr Ile Tyr Phe His Lys Ala		
370	375	380
Pro Ser Pro Glu Lys Ala Glu Glu Glu Ser Glu Arg Leu Leu Arg Glu		
385	390	395
Leu Tyr Leu Phe Asp Val Leu Arg Ala Asp Arg Thr Thr Ala Ala His		
405	410	415
Gly Leu Glu Leu Arg Val Pro Phe Leu Asp His Arg Phe Ser Ser Tyr		
420	425	430
Tyr Leu Ser Leu Pro Pro Glu Met Arg Ile Pro Lys Asn Gly Ile Glu		
435	440	445
Lys His Leu Leu Arg Glu Thr Phe Glu Asp Ser Asn Leu Ile Pro Lys		
450	455	460
Glu Ile Leu Trp Arg Pro Lys Glu Ala Phe Ser Asp Gly Ile Thr Ser		
465	470	475
Val Lys Asn Ser Trp Phe Lys Ile Leu Gln Glu Tyr Val Glu His Gln		
485	490	495
Val Asp Asp Ala Met Met Ala Asn Ala Ala Gln Lys Phe Pro Phe Asn		
500	505	510
Thr Pro Lys Thr Lys Glu Gly Tyr Tyr Tyr Arg Gln Val Phe Glu Arg		
515	520	525
His Tyr Pro Gly Arg Ala Asp Trp Leu Ser His Tyr Trp Met Pro Lys		

1342

530                      535                      540  
 Trp Ile Asn Ala Thr Asp Pro Ser Ala Arg Thr Leu Thr His Tyr Lys  
 545                      550                      555                      560  
 Ser Ala Val Lys Ala  
                     565

&lt;210&gt; 1303

&lt;211&gt; 441

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1303

Arg Arg Arg Arg Ala Cys Arg Ser Ala Glu Gly Thr Gly Leu Arg Ser  
 1                      5                      10                      15

Leu Leu Leu Pro Pro Arg Leu Gln Leu Pro Ala Gly Pro Phe Ser Arg  
                     20                      25                      30

Cys Arg Trp Asp Pro Val Ser Ser Pro Arg Pro Ser Thr Met Pro Pro  
                     35                      40                      45

Lys Lys Gly Gly Asp Gly Ile Lys Pro Pro Pro Ile Ile Gly Arg Phe  
                     50                      55                      60

Gly Thr Ser Leu Lys Ile Gly Ile Val Gly Leu Pro Asn Val Gly Lys  
                     65                      70                      75                      80

Ser Thr Phe Phe Asn Val Leu Thr Asn Ser Gln Ala Ser Ala Glu Asn  
                     85                      90                      95

Phe Pro Phe Cys Thr Ile Asp Pro Asn Glu Ser Arg Val Pro Val Pro  
                     100                      105                      110

Asp Glu Arg Phe Asp Phe Leu Cys Gln Tyr His Lys Pro Ala Ser Lys  
                     115                      120                      125

Ile Pro Ala Phe Leu Asn Val Val Asp Ile Ala Gly Leu Val Lys Gly  
                     130                      135                      140

Ala His Asn Gly Gln Gly Leu Gly Asn Ala Phe Leu Ser His Ile Ser  
                     145                      150                      155                      160

Ala Cys Asp Gly Ile Phe His Leu Thr Arg Ala Phe Glu Asp Asp Asp  
                     165                      170                      175

Ile Thr His Val Glu Gly Ser Val Asp Pro Ile Arg Asp Ile Glu Ile  
                     180                      185                      190

1343

Ile His Glu Glu Leu Gln Leu Lys Asp Glu Glu Met Ile Gly Pro Ile  
 195 200 205

Ile Asp Lys Leu Glu Lys Val Ala Val Arg Gly Gly Asp Lys Lys Leu  
 210 215 220

Lys Pro Glu Tyr Asp Ile Met Cys Lys Val Lys Ser Trp Val Ile Asp  
 225 230 235 240

Gln Lys Lys Pro Val Arg Phe Tyr His Asp Trp Asn Asp Lys Glu Ile  
 245 250 255

Glu Val Leu Asn Lys His Leu Phe Leu Thr Ser Lys Pro Met Val Tyr  
 260 265 270

Leu Val Asn Leu Ser Glu Lys Asp Tyr Ile Arg Lys Lys Asn Lys Trp  
 275 280 285

Leu Ile Lys Ile Lys Glu Trp Val Asp Lys Tyr Asp Pro Gly Ala Leu  
 290 295 300

Val Ile Pro Phe Ser Gly Ala Leu Glu Leu Lys Leu Gln Glu Leu Ser  
 305 310 315 320

Ala Glu Glu Arg Gln Lys Tyr Leu Glu Ala Asn Met Thr Gln Ser Ala  
 325 330 335

Leu Pro Lys Ile Ile Lys Ala Gly Phe Ala Ala Leu Gln Leu Glu Tyr  
 340 345 350

Phe Phe Thr Ala Gly Pro Asp Glu Val Arg Ala Trp Thr Ile Arg Lys  
 355 360 365

Gly Thr Lys Ala Pro Gln Ala Ala Gly Lys Ile His Thr Asp Phe Glu  
 370 375 380

Lys Gly Phe Ile Met Ala Glu Val Met Lys Tyr Glu Asp Phe Lys Glu  
 385 390 395 400

Glu Gly Ser Glu Asn Ala Val Lys Ala Ala Gly Lys Tyr Arg Gln Gln  
 405 410 415

Gly Arg Asn Tyr Ile Val Glu Asp Gly Asp Ile Ile Phe Phe Lys Phe  
 420 425 430

Asn Thr Pro Gln Gln Pro Lys Lys Lys  
 435 440

1344

&lt;210&gt; 1304

&lt;211&gt; 94

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1304

Glu Lys Lys Arg Gly Arg Glu Asp Lys Pro Gly Thr Met Ala Thr Phe  
 1 5 10 15

Pro Pro Ala Thr Ser Ala Pro Gln Gln Pro Pro Gly Pro Glu Asp Glu  
 20 25 30

Asp Ser Ser Leu Asp Glu Ser Asp Leu Tyr Ser Leu Ala His Ser Tyr  
 35 40 45

Leu Gly Gly Gly Gly Arg Lys Gly Arg Thr Lys Arg Glu Ala Ala Ala  
 50 55 60

Asn Thr Asn Arg Pro Ser Pro Gly Gly His Glu Arg Lys Leu Val Thr  
 65 70 75 80

Lys Leu Gln Asn Ser Glu Arg Lys Lys Arg Gly Ala Arg Arg  
 85 90

&lt;210&gt; 1305

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1305

Val Ile Leu Glu Met Val Ile Val Phe Cys Leu Val Thr Phe Ala Thr  
 1 5 10 15

Val Pro Phe Lys Thr Met Trp Lys Pro Gln Val Cys Gly Gln His Arg  
 20 25 30

Trp Asn Asp Ile Leu Cys Phe Leu Arg Leu Pro Ser Thr Arg His Ile  
 35 40 45

Ser Leu Val Leu Gln Met Ser Ala Gln Val Leu Val Thr Ser Phe Ser  
 50 55 60

Cys Cys Pro Gly Lys Ser Val Cys Ala Gly Ala Gly Ala Leu Ala Leu  
 65 70 75 80

Phe Arg

1345

&lt;210&gt; 1306

&lt;211&gt; 231

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1306

Ala Arg Glu Met Ala Ala Gln Gln Arg Asp Cys Gly Gly Ala Ala Gln  
 1 5 10 15

Leu Ala Gly Pro Ala Ala Glu Ala Asp Pro Leu Gly Arg Phe Thr Cys  
 20 25 30

Pro Val Cys Leu Glu Val Tyr Glu Lys Pro Val Gln Val Pro Cys Gly  
 35 40 45

His Val Phe Cys Ser Ala Cys Leu Gln Glu Cys Leu Lys Pro Lys Lys  
 50 55 60

Pro Val Cys Gly Val Cys Arg Ser Ala Leu Ala Pro Gly Val Arg Ala  
 65 70 75 80

Val Glu Leu Glu Arg Gln Ile Glu Ser Thr Glu Thr Ser Cys His Gly  
 85 90 95

Cys Arg Lys Asn Phe Phe Leu Ser Lys Ile Arg Ser His Val Ala Thr  
 100 105 110

Cys Ser Lys Tyr Gln Asn Tyr Ile Met Glu Gly Val Lys Ala Thr Ile  
 115 120 125

Lys Asp Ala Ser Leu Gln Pro Arg Asn Val Pro Asn Arg Tyr Thr Phe  
 130 135 140

Pro Cys Pro Tyr Cys Pro Glu Lys Asn Phe Asp Gln Glu Gly Leu Val  
 145 150 155 160

Glu His Cys Lys Leu Phe His Ser Thr Asp Thr Lys Ser Val Val Cys  
 165 170 175

Pro Ile Cys Ala Ser Met Pro Trp Gly Asp Pro Asn Tyr Arg Ser Ala  
 180 185 190

Asn Phe Arg Glu His Ile Gln Arg Arg His Arg Phe Ser Tyr Asp Thr  
 195 200 205

Phe Val Asp Tyr Asp Val Asp Glu Glu Asp Met Met Asn Gln Val Leu  
 210 215 220

Gln Arg Ser Ile Ile Asp Gln  
 225 230



1346

&lt;210&gt; 1307

&lt;211&gt; 170

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1307

Gln Lys Gln Arg Thr Phe Trp Lys Tyr Tyr Tyr Asp Gly Lys Asp Tyr  
1 5 10 15

Ile Glu Phe Asn Lys Glu Ile Pro Ala Trp Val Pro Phe Asp Pro Ala  
20 25 30

Ala Gln Ile Thr Lys Gln Lys Trp Glu Ala Glu Pro Val Tyr Val Gln  
35 40 45

Arg Ala Lys Ala Tyr Leu Glu Glu Glu Cys Pro Ala Thr Leu Arg Lys  
50 55 60

Tyr Leu Lys Tyr Ser Lys Asn Ile Leu Asp Arg Gln Asp Pro Pro Ser  
65 70 75 80

Val Val Val Thr Ser His Gln Ala Pro Gly Glu Lys Lys Lys Leu Lys  
85 90 95

Cys Leu Ala Tyr Asp Phe Tyr Pro Gly Lys Ile Asp Val His Trp Thr  
100 105 110

Arg Ala Gly Glu Val Gln Glu Pro Glu Leu Arg Gly Asp Val Leu His  
115 120 125

Asn Gly Asn Gly Thr Tyr Gln Ser Trp Val Val Val Ala Val Pro Pro  
130 135 140

Gln Asp Thr Ala Pro Tyr Ser Cys His Val Gln His Ser Ser Leu Ala  
145 150 155 160

Gln Pro Leu Val Val Pro Trp Glu Ala Ser  
165 170

&lt;210&gt; 1308

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1347

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1308

Cys Ser Cys Thr Val Arg Ala Arg Arg Arg Leu Asn Arg Gly Leu Arg  
 1 5 10 15

Arg Lys Gln His Ser Leu Leu Lys Arg Leu Arg Lys Ala Lys Lys Glu  
 20 25 30

Ala Pro Pro Met Glu Lys Pro Glu Val Val Lys Thr His Leu Arg Asp  
 35 40 45

Met Ile Ile Leu Pro Glu Met Val Gly Ser Met Val Gly Val Tyr Asn  
 50 55 60

Gly Lys Thr Phe Asn Gln Val Glu Ile Lys Pro Glu Met Ile Gly His  
 65 70 75 80

Tyr Leu Gly Glu Phe Ser Ile Thr Tyr Lys Pro Val Lys His Xaa Arg  
 85 90 95

Pro Gly Ile Gly Ala Thr His Xaa Ser Arg Phe Ile Pro Leu Lys  
 100 105 110

&lt;210&gt; 1309

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1309

Pro Val Ser Pro Gln Glu Arg Pro Pro Pro Tyr Leu Ala Val Pro Gly  
 1 5 10 15

His Gly Glu Glu Tyr Pro Val Ala Gly Ala His Ser Ser Pro Pro Lys  
 20 25 30

Ala Arg Phe Leu Arg Val Pro Ser Glu His Pro Tyr Leu Thr Pro Ser  
 35 40 45

Pro Glu Ser Pro Glu His Trp Ala Ser Pro Ser Pro Ser Leu Ser  
 50 55 60

Asp Trp Ser Glu Ser Thr Pro Ser Pro Ala Thr Ala Thr Gly Ala Met

1348

65                                      70                                      75                                      80

Ala Thr Thr Thr Gly Ala Leu Pro Ala Gln Pro Leu Pro Leu Ser Val  
    85                                      90                                      95

Pro Ser Ser Leu Ala Gln Ala Gln Thr Gln Leu Gly Pro Gln Pro Glu  
    100                                      105                                      110

Val Thr Pro Lys Arg Gln Val Leu Ala  
    115                                      120

&lt;210&gt; 1310

&lt;211&gt; 206

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1310

Gln Cys Pro Gly Arg Ala Gly Ala Pro Gln Thr Arg Ala Pro Arg Ala  
   1                                      5                                      10                                      15

Arg Glu Arg Gly Gly Ala Met Ala Thr Ala Asn Gly Ala Val Glu Asn  
    20                                      25                                      30

Gly Gln Pro Asp Arg Lys Pro Pro Ala Leu Pro Arg Pro Ile Arg Asn  
    35                                      40                                      45

Leu Glu Val Lys Phe Thr Lys Ile Phe Ile Asn Asn Glu Trp His Glu  
    50                                      55                                      60

Ser Lys Ser Gly Lys Lys Phe Ala Thr Cys Asn Pro Ser Thr Arg Glu  
   65                                      70                                      75                                      80

Gln Ile Cys Glu Val Glu Glu Gly Asp Lys Pro Asp Val Asp Lys Ala  
    85                                      90                                      95

Val Glu Ala Ala Gln Val Ala Phe Gln Arg Gly Ser Pro Trp Arg Arg  
    100                                      105                                      110

Leu Asp Ala Leu Ser Arg Gly Arg Leu Leu His Gln Leu Ala Asp Leu  
    115                                      120                                      125

Val Glu Arg Asp Arg Ala Thr Leu Ala Ala Leu Glu Thr Met Asp Thr  
    130                                      135                                      140

Gly Lys Pro Phe Leu His Ala Phe Phe Ile Asp Leu Glu Gly Cys Ile  
   145                                      150                                      155                                      160

Arg Thr Leu Arg Tyr Phe Ala Gly Trp Ala Asp Lys Ile Gln Gly Lys  
    165                                      170                                      175

1349

Thr Ile Pro Thr Asp Asp Asn Val Cys Ala Ser Pro Gly Met Ser Pro  
                   180                  185                  190

Leu Val Ser Val Gly Pro Ser Leu His Gly Thr Ser Pro Cys  
                   195                  200                  205

&lt;210&gt; 1311

&lt;211&gt; 142

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1311

Ser Trp Glu Thr Glu Lys Met Gln Thr Ala Gly Ala Leu Phe Ile Ser  
   1                  5                  10                  15

Pro Ala Leu Ile Arg Cys Cys Thr Arg Gly Leu Ile Arg Pro Val Ser  
                   20                  25                  30

Ala Ser Phe Leu Asn Ser Pro Val Asn Ser Ser Lys Gln Pro Ser Tyr  
                   35                  40                  45

Ser Asn Phe Pro Leu Gln Val Ala Arg Arg Glu Phe Gln Thr Ser Val  
   50                  55                  60

Val Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala  
   65                  70                  75                  80

Ala Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe  
                   85                  90                  95

Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln  
                   100                  105                  110

Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly  
                   115                  120                  125

Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met  
                   130                  135                  140

&lt;210&gt; 1312

&lt;211&gt; 495

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1350

&lt;222&gt; (121)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (392)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (460)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1312

Arg	Arg	Met	Glu	Gly	Gln	Asp	Glu	Val	Ser	Ala	Arg	Glu	Gln	His	Phe
1				5					10					15	

His	Ser	Gln	Val	Arg	Glu	Ser	Thr	Ile	Cys	Phe	Leu	Leu	Phe	Ala	Ile
			20					25					30		

Leu	Tyr	Val	Val	Ser	Tyr	Phe	Ile	Ile	Thr	Arg	Tyr	Lys	Arg	Lys	Ser
		35					40					45			

Asp	Glu	Gln	Glu	Asp	Glu	Asp	Ala	Ile	Val	Asn	Arg	Ile	Ser	Leu	Phe
	50					55					60				

Leu	Ser	Thr	Phe	Thr	Leu	Ala	Val	Ser	Ala	Gly	Ala	Val	Leu	Leu	Leu
65					70					75					80

Pro	Phe	Ser	Ile	Ile	Ser	Asn	Glu	Ile	Leu	Leu	Ser	Phe	Pro	Gln	Asn
			85						90					95	

Tyr	Tyr	Ile	Gln	Trp	Leu	Asn	Gly	Ser	Leu	Ile	His	Gly	Leu	Trp	Asn
		100					105					110			

Leu	Ala	Ser	Leu	Phe	Ser	Asn	Leu	Xaa	Leu	Phe	Val	Leu	Met	Pro	Phe
	115					120					125				

Ala	Phe	Phe	Phe	Leu	Glu	Ser	Glu	Gly	Phe	Ala	Gly	Leu	Lys	Lys	Gly
130						135					140				

Ile	Arg	Ala	Arg	Ile	Leu	Glu	Thr	Leu	Val	Met	Leu	Leu	Leu	Leu	Ala
145					150					155					160

Leu	Leu	Ile	Leu	Gly	Ile	Val	Trp	Val	Ala	Ser	Ala	Leu	Ile	Asp	Asn
			165						170					175	

Asp	Ala	Ala	Ser	Met	Glu	Ser	Leu	Tyr	Asp	Leu	Trp	Glu	Phe	Tyr	Leu
			180						185					190	

Pro	Tyr	Leu	Tyr	Ser	Cys	Ile	Ser	Leu	Met	Gly	Cys	Leu	Leu	Leu	Leu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1351

195	200	205
Leu Cys Thr Pro Val Gly	Leu Ser Arg Met Phe Thr	Val Met Gly Gln
210	215	220
Leu Leu Val Lys Pro Thr	Ile Leu Glu Asp Leu Asp	Glu Gln Ile Tyr
225	230	235 240
Ile Ile Thr Leu Glu Glu Glu	Ala Leu Gln Arg Arg	Leu Asn Gly Leu
245	250	255
Ser Ser Ser Val Glu Tyr Asn	Ile Met Glu Leu Glu Gln	Glu Leu Glu
260	265	270
Asn Val Lys Thr Leu Lys Thr	Lys Leu Asp Pro Trp	Ser Ser Phe Ser
275	280	285
Val Leu Gln Ser Pro Val Trp	His Phe Ala Ala Gln	Thr Pro Ala Asp
290	295	300
Ile Val Ser Pro Asp Ser His	Phe Met Leu Ser Thr	Gln Gly Met Ser
305	310	315 320
Trp Ala Gln Leu Val Phe Leu	Leu Pro Ala Ser Arg	Pro Gly Asn Ser
325	330	335
Gln Asp Lys Arg Arg Lys Lys	Ala Ser Ala Trp Glu Arg	Asn Leu Val
340	345	350
Tyr Pro Ala Val Met Val Leu	Leu Leu Ile Glu Thr	Ser Ile Ser Val
355	360	365
Leu Leu Val Ala Cys Asn Ile	Leu Cys Leu Leu Val	Asp Glu Thr Ala
370	375	380
Met Pro Lys Gly Thr Arg Gly	Xaa Gly Ile Gly Asn	Ala Ser Leu Ser
385	390	395 400
Thr Phe Gly Phe Val Gly Ala	Ala Leu Glu Ile Ile	Leu Ile Phe Tyr
405	410	415
Leu Met Val Ser Ser Val Val	Gly Phe Tyr Ser Leu	Arg Phe Phe Gly
420	425	430
Asn Phe Thr Pro Lys Lys Asp	Asp Thr Thr Met Thr	Lys Ile Ile Gly
435	440	445
Asn Cys Val Ser Ile Leu Val	Leu Ser Ser Ala Xaa	Pro Val Met Ser
450	455	460
Arg Thr Leu Gly Leu His Lys	Leu His Leu Pro Asn	Thr Ser Arg Asp

1352

465                                      470                                      475                                      480  
 Ser Glu Thr Ala Lys Pro Ser Val Asn Gly His Gln Lys Ala Leu  
    485                                      490                                      495  
  
 <210> 1313  
 <211> 790  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 1313  
 Gly Thr Arg Gly Thr Ala Thr Glu Arg Leu Lys Met Ile Pro Phe Leu  
   1   5   10   15  
 Pro Met Phe Ser Leu Leu Leu Leu Leu Ile Val Asn Pro Ile Asn Ala  
    20   25   30  
 Asn Asn His Tyr Asp Lys Ile Leu Ala His Ser Arg Ile Arg Gly Arg  
    35   40   45  
 Asp Gln Gly Pro Asn Val Cys Ala Leu Gln Gln Ile Leu Gly Thr Lys  
    50   55   60  
 Lys Lys Tyr Phe Ser Thr Cys Lys Asn Trp Tyr Lys Lys Ser Ile Cys  
   65   70   75   80  
 Gly Gln Lys Thr Thr Val Leu Tyr Glu Cys Cys Pro Gly Tyr Met Arg  
    85   90   95  
 Met Glu Gly Met Lys Gly Cys Pro Ala Val Leu Pro Ile Asp His Val  
    100   105   110  
 Tyr Gly Thr Leu Gly Ile Val Gly Ala Thr Thr Thr Gln Arg Tyr Ser  
   115   120   125  
 Asp Ala Ser Lys Leu Arg Glu Glu Ile Glu Gly Lys Gly Ser Phe Thr  
   130   135   140  
 Tyr Phe Ala Pro Ser Asn Glu Ala Trp Asp Asn Leu Asp Ser Asp Ile  
   145   150   155   160  
 Arg Arg Gly Leu Glu Ser Asn Val Asn Val Glu Leu Leu Asn Ala Leu  
    165   170   175  
 His Ser His Met Ile Asn Lys Arg Met Leu Thr Lys Asp Leu Lys Asn  
    180   185   190  
 Gly Met Ile Ile Pro Ser Met Tyr Asn Asn Leu Gly Leu Phe Ile Asn  
   195   200   205

1353

His Tyr Pro Asn Gly Val Val Thr Val Asn Cys Ala Arg Ile Ile His  
 210 215 220

Gly Asn Gln Ile Ala Thr Asn Gly Val Val His Val Ile Asp Arg Val  
 225 230 235 240

Leu Thr Gln Ile Gly Thr Ser Ile Gln Asp Phe Ile Glu Ala Glu Asp  
 245 250 255

Asp Leu Ser Ser Phe Arg Ala Ala Ala Ile Thr Ser Asp Ile Leu Glu  
 260 265 270

Ala Leu Gly Arg Asp Gly His Phe Thr Leu Phe Ala Pro Thr Asn Glu  
 275 280 285

Ala Phe Glu Lys Leu Pro Arg Gly Val Leu Glu Arg Ile Met Gly Asp  
 290 295 300

Lys Val Ala Ser Glu Ala Leu Met Lys Tyr His Ile Leu Asn Thr Leu  
 305 310 315 320

Gln Cys Ser Glu Ser Ile Met Gly Gly Ala Val Phe Glu Thr Leu Glu  
 325 330 335

Gly Asn Thr Ile Glu Ile Gly Cys Asp Gly Asp Ser Ile Thr Val Asn  
 340 345 350

Gly Ile Lys Met Val Asn Lys Lys Asp Ile Val Thr Asn Asn Gly Val  
 355 360 365

Ile His Leu Ile Asp Gln Val Leu Ile Pro Asp Ser Ala Lys Gln Val  
 370 375 380

Ile Glu Leu Ala Gly Lys Gln Gln Thr Thr Phe Thr Asp Leu Val Ala  
 385 390 395 400

Gln Leu Gly Leu Ala Ser Ala Leu Arg Pro Asp Gly Glu Tyr Thr Leu  
 405 410 415

Leu Ala Pro Val Asn Asn Ala Phe Ser Asp Asp Thr Leu Ser Met Asp  
 420 425 430

Gln Arg Leu Leu Lys Leu Ile Leu Gln Asn His Ile Leu Lys Val Lys  
 435 440 445

Val Gly Leu Asn Glu Leu Tyr Asn Gly Gln Ile Leu Glu Thr Ile Gly  
 450 455 460

Gly Lys Gln Leu Arg Val Phe Val Tyr Arg Thr Ala Val Cys Ile Glu  
 465 470 475 480



1354

Asn Ser Cys Met Glu Lys Gly Ser Lys Gln Gly Arg Asn Gly Ala Ile  
 485 490 495  
 His Ile Phe Arg Glu Ile Ile Lys Pro Ala Glu Lys Ser Leu His Glu  
 500 505 510  
 Lys Leu Lys Gln Asp Lys Arg Phe Ser Thr Phe Leu Ser Leu Leu Glu  
 515 520 525  
 Ala Ala Asp Leu Lys Glu Leu Leu Thr Gln Pro Gly Asp Trp Thr Leu  
 530 535 540  
 Phe Val Pro Thr Asn Asp Ala Phe Lys Gly Met Thr Ser Glu Glu Lys  
 545 550 555 560  
 Glu Ile Leu Ile Arg Asp Lys Asn Ala Leu Gln Asn Ile Ile Leu Tyr  
 565 570 575  
 His Leu Thr Pro Gly Val Phe Ile Gly Lys Gly Phe Glu Pro Gly Val  
 580 585 590  
 Thr Asn Ile Leu Lys Thr Thr Gln Gly Ser Lys Ile Phe Leu Lys Glu  
 595 600 605  
 Val Asn Asp Thr Leu Leu Val Asn Glu Leu Lys Ser Lys Glu Ser Asp  
 610 615 620  
 Ile Met Thr Thr Asn Gly Val Ile His Val Val Asp Lys Leu Leu Tyr  
 625 630 635 640  
 Pro Ala Asp Thr Pro Val Gly Asn Asp Gln Leu Leu Glu Ile Leu Asn  
 645 650 655  
 Lys Leu Ile Lys Tyr Ile Gln Ile Lys Phe Val Arg Gly Ser Thr Phe  
 660 665 670  
 Lys Glu Ile Pro Val Thr Val Tyr Lys Pro Ile Ile Lys Lys Tyr Thr  
 675 680 685  
 Lys Ile Ile Asp Gly Val Pro Val Glu Ile Thr Glu Lys Glu Thr Arg  
 690 695 700  
 Glu Glu Arg Ile Ile Thr Gly Pro Glu Ile Lys Tyr Thr Arg Ile Ser  
 705 710 715 720  
 Thr Gly Gly Gly Glu Thr Glu Glu Thr Leu Lys Lys Leu Leu Gln Glu  
 725 730 735  
 Glu Val Thr Lys Val Thr Lys Phe Ile Glu Gly Gly Asp Gly His Leu  
 740 745 750

1355

Phe Glu Asp Glu Glu Ile Lys Arg Leu Leu Gln Gly Asp Thr Pro Val  
           755                          760                          765  
 Arg Lys Leu Gln Ala Asn Lys Lys Val Gln Gly Ser Arg Arg Arg Leu  
           770                          775                          780  
 Arg Glu Gly Arg Ser Gln  
 785                          790

&lt;210&gt; 1314

&lt;211&gt; 73

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1314

Thr Ser Trp Ala Phe Asp Glu Thr Gly Xaa Asn Thr Ala Val Phe Leu  
   1                          5                          10                          15

Leu Glu Ile Xaa Trp Gly Ile Phe Phe Glu Leu Met Gly Thr Ile Arg  
           20                          25                          30

His Asn Cys Leu His Lys Leu Gly Ile Xaa Asp Phe Gly Ile Thr Ile  
           35                          40                          45

Tyr Gln Asn Gly Asp Ile Ser Pro Leu Val Leu Arg Cys Lys Pro Lys  
           50                          55                          60

Asn Ile Met Thr Ser Phe Gln Ala Ser  
   65                          70

&lt;210&gt; 1315

1356

&lt;211&gt; 268

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1315

Pro Gly Arg Pro Thr Arg Pro Arg Thr Arg Gly Ile Asn Lys Leu Ile  
 1 5 10 15

Arg Ile Gly Arg Asn Glu Cys Val Val Val Ile Arg Val Asp Lys Glu  
 20 25 30

Lys Gly Tyr Ile Asp Leu Ser Lys Arg Arg Val Ser Pro Glu Glu Ala  
 35 40 45

Ile Lys Cys Glu Asp Lys Phe Thr Lys Ser Lys Thr Val Tyr Ser Ile  
 50 55 60

Leu Arg His Val Ala Glu Val Leu Glu Tyr Thr Lys Asp Glu Gln Leu  
 65 70 75 80

Glu Ser Leu Phe Gln Arg Thr Ala Trp Val Phe Asp Asp Lys Tyr Lys  
 85 90 95

Arg Pro Gly Tyr Gly Ala Tyr Asp Ala Phe Lys His Ala Val Ser Asp  
 100 105 110

Pro Ser Ile Leu Asp Ser Leu Asp Leu Asn Glu Asp Glu Arg Glu Val  
 115 120 125

Leu Ile Asn Asn Ile Asn Arg Arg Leu Thr Pro Gln Ala Val Lys Ile  
 130 135 140

Arg Ala Asp Ile Glu Val Ala Cys Tyr Gly Tyr Glu Gly Ile Asp Ala  
 145 150 155 160

Val Lys Glu Ala Leu Arg Ala Gly Leu Asn Cys Ser Thr Glu Asn Met  
 165 170 175

Pro Ile Lys Ile Asn Leu Ile Ala Pro Pro Arg Tyr Val Met Thr Thr  
 180 185 190

Thr Thr Leu Glu Arg Thr Glu Gly Leu Ser Val Leu Ser Gln Ala Met  
 195 200 205

Ala Val Ile Lys Glu Lys Ile Glu Glu Lys Arg Gly Val Phe Asn Val  
 210 215 220

Gln Met Glu Pro Lys Val Val Thr Asp Thr Asp Glu Thr Glu Leu Ala  
 225 230 235 240

Arg Gln Met Glu Arg Leu Glu Arg Glu Asn Ala Glu Val Asp Gly Asp

1357

	245		250		255
Asp Asp Ala Glu Glu Met Glu Ala Lys Ala Glu Asp					
	260		265		
<210> 1316					
<211> 315					
<212> PRT					
<213> Homo sapiens					
<400> 1316					
Gly Gln Arg Ala Gly Met Pro His Ala Gln Gly Gly Trp Ser Gly Pro					
1	5		10		15
Ala Ala Asp Ser Ala Glu Pro Ala Leu Pro Ala Gly Glu Pro Gly Gly					
	20		25		30
Pro Thr Leu Met Arg Leu Asn Ser Val Gln Ser Ser Glu Arg Pro Leu					
	35		40		45
Phe Leu Val His Pro Ile Glu Gly Ser Thr Thr Val Phe His Ser Leu					
	50		55		60
Ala Ser Arg Leu Ser Ile Pro Thr Tyr Gly Leu Gln Cys Thr Arg Ala					
65		70		75	80
Ala Pro Leu Asp Ser Ile His Ser Leu Ala Ala Tyr Tyr Ile Asp Cys					
	85		90		95
Ile Arg Gln Val Gln Pro Glu Gly Pro Tyr Arg Val Ala Gly Tyr Ser					
	100		105		110
Tyr Gly Ala Cys Val Ala Phe Glu Met Cys Ser Gln Leu Gln Ala Gln					
	115		120		125
Gln Ser Pro Ala Pro Thr His Asn Ser Leu Phe Leu Phe Asp Gly Ser					
	130		135		140
Pro Thr Tyr Val Leu Ala Tyr Thr Gln Ser Tyr Arg Ala Lys Leu Thr					
145		150		155	160
Pro Gly Cys Glu Ala Glu Ala Glu Thr Glu Ala Ile Cys Phe Phe Val					
	165		170		175
Gln Gln Phe Thr Asp Met Glu His Asn Arg Val Leu Glu Ala Leu Leu					
	180		185		190
Pro Leu Lys Gly Leu Glu Glu Arg Val Ala Ala Ala Val Asp Leu Ile					
	195		200		205

1358

Ile Lys Ser His Gln Gly Leu Asp Arg Gln Glu Leu Ser Phe Ala Ala  
210 215 220

Arg Ser Phe Tyr Tyr Lys Leu Arg Ala Ala Glu Gln Tyr Thr Pro Lys  
225 230 235 240

Ala Lys Tyr His Gly Asn Val Met Leu Leu Arg Ala Lys Thr Gly Gly  
245 250 255

Ala Tyr Gly Glu Asp Leu Gly Ala Asp Tyr Asn Leu Ser Gln Val Cys  
260 265 270

Asp Gly Lys Val Ser Val His Val Ile Glu Gly Asp His Arg Thr Leu  
275 280 285

Leu Glu Gly Ser Gly Leu Glu Ser Ile Ile Ser Ile Ile His Ser Ser  
290 295 300

Leu Ala Glu Pro Arg Val Ser Val Arg Glu Gly  
305 310 315

<210> 1317

<211> 191

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (5)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (10)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (20)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

1359

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (186)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1317

Thr	Thr	Xaa	Val	Xaa	Asp	Arg	Leu	Leu	Xaa	Thr	Ser	Gly	Ser	Pro	Gly
1				5					10					15	

Thr	Asp	Arg	Xaa	Phe	Gly	His	Glu	Xaa	Glu	Met	Ala	Pro	Asn	Ala	Ser
			20					25					30		

Cys	Leu	Cys	Val	His	Val	Arg	Ser	Glu	Glu	Trp	Asp	Leu	Met	Thr	Phe
		35					40					45			

Asp	Ala	Asn	Pro	Tyr	Asp	Ser	Val	Lys	Lys	Ile	Lys	Glu	His	Val	Arg
	50					55				60					

Ser	Lys	Thr	Lys	Val	Pro	Val	Gln	Asp	Gln	Val	Leu	Leu	Leu	Gly	Ser
65				70					75					80	

Lys	Ile	Leu	Lys	Pro	Arg	Arg	Ser	Leu	Ser	Ser	Tyr	Gly	Ile	Asp	Lys
			85					90						95	

Glu	Lys	Thr	Ile	His	Leu	Thr	Leu	Lys	Val	Val	Lys	Pro	Ser	Asp	Glu
			100				105						110		

Glu	Leu	Pro	Leu	Phe	Leu	Val	Glu	Ser	Gly	Asp	Glu	Ala	Lys	Arg	His
		115					120					125			

Leu	Leu	Gln	Val	Arg	Arg	Ser	Ser	Ser	Val	Ala	Gln	Val	Lys	Ala	Met
	130					135					140				

Ile	Glu	Thr	Lys	Thr	Gly	Ile	Ile	Pro	Glu	Thr	Gln	Ile	Val	Thr	Cys
145					150				155					160	

Asn	Gly	Lys	Arg	Leu	Glu	Asp	Gly	Lys	Met	Met	Ala	Asp	Tyr	Gly	Ile
			165					170						175	

Arg	Lys	Gly	Asn	Leu	Leu	Phe	Leu	Ala	Xaa	Tyr	Cys	Ile	Gly	Gly	
			180					185						190	

&lt;210&gt; 1318

&lt;211&gt; 230

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1360

&lt;400&gt; 1318

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Arg Asn Leu Gln Glu Thr Ala Ile Met Ala Glu Lys Pro Lys Leu His
 1              5              10              15

Tyr Phe Asn Ala Arg Gly Arg Met Glu Ser Thr Arg Trp Leu Leu Ala
      20              25              30

Ala Ala Gly Val Glu Phe Glu Glu Lys Phe Ile Lys Ser Ala Glu Asp
      35              40              45

Leu Asp Lys Leu Arg Asn Asp Gly Tyr Leu Met Phe Gln Gln Val Pro
 50              55              60

Met Val Glu Ile Asp Gly Met Lys Leu Val Gln Thr Arg Ala Ile Leu
 65              70              75              80

Asn Tyr Ile Ala Ser Lys Tyr Asn Leu Tyr Gly Lys Asp Ile Lys Glu
      85              90              95

Arg Ala Leu Ile Asp Met Tyr Ile Glu Gly Ile Ala Asp Leu Gly Glu
      100              105              110

Met Ile Leu Leu Leu Pro Val Cys Pro Pro Glu Glu Lys Asp Ala Lys
      115              120              125

Leu Ala Leu Ile Lys Glu Lys Ile Lys Asn Arg Tyr Phe Pro Ala Phe
      130              135              140

Glu Lys Val Leu Lys Ser His Gly Gln Asp Tyr Leu Val Gly Asn Lys
      145              150              155              160

Leu Ser Arg Ala Asp Ile His Leu Val Glu Leu Leu Tyr Tyr Val Glu
      165              170              175

Glu Leu Asp Ser Ser Leu Ile Ser Ser Phe Pro Leu Leu Lys Ala Leu
      180              185              190

Lys Thr Arg Ile Ser Asn Leu Pro Thr Val Lys Lys Phe Leu Gln Pro
      195              200              205

Gly Ser Pro Arg Lys Pro Pro Met Asp Glu Lys Ser Leu Glu Glu Ala
      210              215              220

Arg Lys Ile Phe Arg Phe
      225              230

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&lt;210&gt; 1319

&lt;211&gt; 279

1361

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1319

Glu Gly Pro Ala Glu Gly Asn Met Ala Ala Lys Val Phe Glu Ser Ile  
 1 5 10 15

Gly Lys Phe Gly Leu Ala Leu Ala Val Ala Gly Gly Val Val Asn Ser  
 20 25 30

Ala Leu Tyr Asn Val Asp Ala Gly His Arg Ala Val Ile Phe Asp Arg  
 35 40 45

Phe Arg Gly Val Gln Asp Ile Val Val Gly Glu Gly Thr His Phe Leu  
 50 55 60

Ile Pro Trp Val Gln Lys Pro Ile Ile Phe Asp Cys Arg Ser Arg Pro  
 65 70 75 80

Arg Asn Val Pro Val Ile Thr Gly Ser Lys Asp Leu Gln Asn Val Asn  
 85 90 95

Ile Thr Leu Arg Ile Leu Phe Arg Pro Val Ala Ser Gln Leu Pro Arg  
 100 105 110

Ile Phe Thr Ser Ile Gly Glu Asp Tyr Asp Glu Arg Val Leu Pro Ser  
 115 120 125

Ile Thr Thr Glu Ile Leu Lys Ser Val Val Ala Arg Phe Asp Ala Gly  
 130 135 140

Glu Leu Ile Thr Gln Arg Glu Leu Val Ser Arg Gln Val Ser Asp Asp  
 145 150 155 160

Leu Thr Glu Arg Ala Ala Thr Phe Gly Leu Ile Leu Asp Asp Val Ser  
 165 170 175

Leu Thr His Leu Thr Phe Gly Lys Glu Phe Thr Glu Ala Val Glu Ala  
 180 185 190

Lys Gln Val Ala Gln Gln Glu Ala Glu Arg Ala Arg Phe Val Val Glu  
 195 200 205

Lys Ala Glu Gln Gln Lys Lys Ala Ala Ile Ile Ser Ala Glu Gly Asp  
 210 215 220

Ser Lys Ala Ala Glu Leu Ile Ala Asn Ser Leu Ala Thr Ala Gly Asp  
 225 230 235 240

Gly Leu Ile Glu Leu Arg Lys Leu Glu Ala Ala Glu Asp Ile Ala Tyr  
 245 250 255



1362

Gln Leu Ser Arg Ser Arg Asn Ile Thr Tyr Leu Pro Ala Gly Gln Ser  
 260 265 270

Val Leu Leu Gln Leu Pro Gln  
 275

&lt;210&gt; 1320

&lt;211&gt; 406

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1320

Val Thr Ala Cys Ala Ala Pro Ala Ala Trp Leu Pro Ile Leu Val Ala  
 1 5 10 15

Asp Ile Trp Ser Ser Tyr Asn Met Ala Asp Ile Asp Asn Lys Glu Gln  
 20 25 30

Ser Glu Leu Asp Gln Asp Leu Asp Asp Val Glu Glu Val Glu Glu Glu  
 35 40 45

Glu Thr Gly Glu Glu Thr Lys Leu Lys Ala Arg Gln Leu Thr Val Gln  
 50 55 60

Met Met Gln Asn Pro Gln Ile Leu Ala Ala Leu Gln Glu Arg Leu Asp  
 65 70 75 80

Gly Leu Val Glu Thr Pro Thr Gly Tyr Ile Glu Ser Leu Pro Arg Val  
 85 90 95

Val Lys Arg Arg Val Asn Ala Leu Lys Asn Leu Gln Val Lys Cys Ala  
 100 105 110

Gln Ile Glu Ala Lys Phe Tyr Glu Glu Val His Asp Leu Glu Arg Lys  
 115 120 125

Tyr Ala Val Leu Tyr Gln Pro Leu Phe Asp Lys Arg Phe Glu Ile Ile  
 130 135 140

Asn Ala Ile Tyr Glu Pro Thr Glu Glu Glu Cys Glu Trp Lys Pro Asp  
 145 150 155 160

Glu Glu Asp Glu Ile Ser Glu Glu Leu Lys Glu Lys Ala Lys Ile Glu  
 165 170 175

Asp Glu Lys Lys Asp Glu Glu Lys Glu Asp Pro Lys Gly Ile Pro Glu  
 180 185 190

1363

Phe Trp Leu Thr Val Phe Lys Asn Val Asp Leu Leu Ser Asp Met Val  
195 200 205

Gln Glu His Asp Glu Pro Ile Leu Lys His Leu Lys Asp Ile Lys Val  
210 215 220

Lys Phe Ser Asp Ala Gly Gln Pro Met Ser Phe Val Leu Glu Phe His  
225 230 235 240

Phe Glu Pro Asn Glu Tyr Phe Thr Asn Glu Val Leu Thr Lys Thr Tyr  
245 250 255

Arg Met Arg Ser Glu Pro Asp Asp Ser Asp Pro Phe Ser Phe Asp Gly  
260 265 270

Pro Glu Ile Met Gly Cys Thr Gly Cys Gln Ile Asp Trp Lys Lys Gly  
275 280 285

Lys Asn Val Thr Leu Lys Thr Ile Lys Lys Lys Gln Lys His Lys Gly  
290 295 300

Arg Gly Thr Val Arg Thr Val Thr Lys Thr Val Ser Asn Asp Ser Phe  
305 310 315 320

Phe Asn Phe Phe Ala Pro Pro Glu Val Pro Glu Ser Gly Asp Leu Asp  
325 330 335

Asp Asp Ala Glu Ala Ile Leu Ala Ala Asp Phe Glu Ile Gly His Phe  
340 345 350

Leu Arg Glu Arg Ile Ile Pro Arg Ser Val Leu Tyr Phe Thr Gly Glu  
355 360 365

Ala Ile Glu Asp Asp Asp Asp Asp Tyr Asp Glu Glu Gly Glu Glu Ala  
370 375 380

Asp Glu Gly Tyr Gln Leu Phe Glu Glu Val Lys Ser Cys Ser Lys Leu  
385 390 395 400

Phe Gln Arg Trp Leu Gln  
405

&lt;210&gt; 1321

&lt;211&gt; 173

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1364

&lt;222&gt; (55)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1321

Gln Ser Ala Cys Ser Leu Leu Pro Glu Met Pro Arg Ile Leu Thr Arg  
 1 5 10 15

Thr Pro Ser Ser Arg Met Ile Val Leu Arg Leu Met Pro Val Gly Gly  
 20 25 30

Arg Arg Pro Ile Val Thr Ser Phe Gly Gly Cys Ser Thr Ala Pro Arg  
 35 40 45

Ala Asn Phe Pro Leu Pro Xaa Pro Ala Leu Arg Gln Ser Arg Ser Lys  
 50 55 60

Met Ala Val Val Gly Val Ser Ser Val Ser Arg Leu Leu Gly Arg Ser  
 65 70 75 80

Arg Pro Gln Leu Gly Arg Pro Met Ser Ser Gly Ala His Gly Glu Glu  
 85 90 95

Gly Ser Ala Arg Met Trp Lys Thr Leu Thr Phe Phe Val Ala Leu Pro  
 100 105 110

Gly Val Ala Val Ser Met Leu Asn Val Tyr Leu Lys Ser His His Gly  
 115 120 125

Glu His Glu Arg Pro Glu Phe Ile Ala Tyr Pro His Leu Arg Ile Arg  
 130 135 140

Thr Lys Pro Phe Pro Trp Gly Asp Gly Asn His Thr Leu Phe His Asn  
 145 150 155 160

Pro His Val Asn Pro Leu Pro Thr Gly Tyr Glu Asp Glu  
 165 170

&lt;210&gt; 1322

&lt;211&gt; 209

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1322

Lys Thr Gln Ala Ala Ser Val Glu Ala Val Lys Met Leu Asp Glu Ile  
 1 5 10 15

Leu Leu Gln Leu Ser Ala Ser Val Pro Val Asp Val Met Pro Gly Glu  
 20 25 30

1365

Phe Asp Pro Thr Asn Tyr Thr Leu Pro Gln Gln Pro Leu His Pro Cys  
           35                          40                          45  
 Met Phe Pro Leu Ala Thr Ala Tyr Ser Thr Leu Gln Leu Val Thr Asn  
           50                          55                          60  
 Pro Tyr Gln Ala Thr Ile Asp Gly Val Arg Phe Leu Gly Thr Ser Gly  
           65                          70                          75                          80  
 Gln Asn Val Ser Asp Ile Phe Arg Tyr Ser Ser Met Glu Asp His Leu  
                           85                          90                          95  
 Glu Ile Leu Glu Trp Thr Leu Arg Val Arg His Ile Ser Pro Thr Ala  
                           100                          105                          110  
 Pro Asp Thr Leu Gly Cys Tyr Pro Phe Tyr Lys Thr Asp Pro Phe Ile  
           115                          120                          125  
 Phe Pro Glu Cys Pro His Val Tyr Phe Cys Gly Asn Thr Pro Ser Phe  
           130                          135                          140  
 Gly Ser Lys Ile Ile Arg Gly Pro Glu Asp Gln Thr Val Leu Leu Val  
           145                          150                          155                          160  
 Thr Val Pro Asp Phe Ser Ala Thr Gln Thr Ala Cys Leu Val Asn Leu  
                           165                          170                          175  
 Arg Ser Leu Ala Cys Gln Pro Ile Ser Phe Ser Gly Phe Gly Ala Glu  
           180                          185                          190  
 Asp Asp Asp Leu Gly Gly Leu Gly Trp Ala Pro Asp Ser Lys Lys Trp  
           195                          200                          205  
 Phe

&lt;210&gt; 1323

&lt;211&gt; 291

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (57)

1366

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1323

Asn Asn Val Ala Thr Thr His Glu Pro Ala Ser Val Pro Ala Pro Gln  
 1 5 10 15

Gly Asp Leu Leu Ser Gly Ala Glu Pro Glu Gly Gly Asn Xaa Ala Arg  
 20 25 30

Arg Pro Pro Gly Ala Arg Glu Gln Pro Gln Ser Pro Pro Pro Ala Arg  
 35 40 45

Gly Gly Ala Gly Ser Leu Ala Thr Xaa Ala Pro Pro Ser Ser Gly Leu  
 50 55 60

Ser Cys Pro Gly Cys Phe Arg Leu Arg Leu Trp Met Leu Arg Leu Ser  
 65 70 75 80

Glu Arg Asn Met Lys Val Leu Leu Ala Ala Ala Leu Ile Ala Gly Ser  
 85 90 95

Val Phe Phe Leu Leu Leu Pro Gly Pro Ser Ala Ala Asp Glu Lys Lys  
 100 105 110

Lys Gly Pro Lys Val Thr Val Lys Val Tyr Phe Asp Leu Arg Ile Gly  
 115 120 125

Asp Glu Asp Val Gly Arg Val Ile Phe Gly Leu Phe Gly Lys Thr Val  
 130 135 140

Pro Lys Thr Val Asp Asn Phe Val Ala Leu Ala Thr Gly Glu Lys Gly  
 145 150 155 160

Phe Gly Tyr Lys Asn Ser Lys Phe His Arg Val Ile Lys Asp Phe Met  
 165 170 175

Ile Gln Gly Gly Asp Phe Thr Arg Gly Asp Gly Thr Gly Gly Lys Ser  
 180 185 190

Ile Tyr Gly Glu Arg Phe Pro Asp Glu Asn Phe Lys Leu Lys His Tyr  
 195 200 205

Gly Pro Gly Trp Val Ser Met Ala Asn Ala Gly Lys Asp Thr Asn Gly  
 210 215 220

Ser Gln Phe Phe Ile Thr Thr Val Lys Thr Ala Trp Leu Asp Gly Lys  
 225 230 235 240

His Val Val Phe Gly Lys Val Leu Glu Gly Met Glu Val Val Arg Lys  
 245 250 255

1367

Val Glu Ser Thr Lys Thr Asp Ser Arg Asp Lys Pro Leu Lys Asp Val  
 260 265 270

Ile Ile Ala Asp Cys Gly Lys Ile Glu Val Glu Lys Pro Phe Ala Ile  
 275 280 285

Ala Lys Glu  
 290

<210> 1324  
 <211> 150  
 <212> PRT  
 <213> Homo sapiens

<400> 1324  
 Glu Cys Leu Val Arg Ser Lys Asn Ile Thr Gln Ile Val Gly His Ser  
 1 5 10 15

Gly Cys Glu Ala Lys Ser Ile Gln Asn Arg Ala Cys Leu Gly Gln Cys  
 20 25 30

Phe Ser Tyr Ser Val Pro Asn Thr Phe Pro Gln Ser Thr Glu Ser Leu  
 35 40 45

Val His Cys Asp Ser Cys Met Pro Ala Gln Ser Met Trp Glu Ile Val  
 50 55 60

Thr Leu Glu Cys Pro Gly His Glu Glu Val Pro Arg Val Asp Lys Leu  
 65 70 75 80

Val Glu Lys Ile Leu His Cys Ser Cys Gln Ala Cys Gly Lys Glu Pro  
 85 90 95

Ser His Glu Gly Leu Ser Val Tyr Val Gln Gly Glu Asp Gly Pro Gly  
 100 105 110

Ser Gln Pro Gly Thr His Pro His Pro His Pro His Pro His Pro Gly  
 115 120 125

Gly Gln Thr Pro Glu Pro Glu Asp Pro Pro Gly Ala Pro His Thr Glu  
 130 135 140

Glu Glu Gly Ala Glu Asp  
 145 150

<210> 1325  
 <211> 56

1368

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1325

Glu Ile Asn Ile Ser Arg Lys Gly Glu Ser Arg Phe Tyr Lys Met Ser  
1 5 10 15

Gln Leu Ser Asn Ile Trp Gly Ser Asp Ser Phe Phe Val Arg Thr Phe  
20 25 30

Glu Thr Ser Lys Gln Pro Leu Phe Leu Lys Asn Ser Gly Phe Thr Leu  
35 40 45

Thr His Val Ser Phe Thr Pro Phe  
50 55

&lt;210&gt; 1326

&lt;211&gt; 486

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (438)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (447)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1326

Arg Leu Pro Leu Gly Ser Arg Ser Pro Ser Glu Ala Ala Gly Ala Glu  
1 5 10 15

Thr Ala Pro Ser Ser Leu Ser Ala Ala Met Thr Pro Leu Val Ser Arg  
20 25 30

Leu Xaa Arg Leu Trp Ala Ile Met Arg Lys Pro Arg Ala Ala Val Gly  
35 40 45

Ser Gly His Arg Lys Gln Ala Ala Ser Gln Glu Gly Arg Gln Lys His  
50 55 60

1369

Ala	Lys	Asn	Asn	Ser	Gln	Ala	Lys	Pro	Ser	Ala	Cys	Asp	Gly	Leu	Ala	
65					70					75					80	
Arg	Gln	Pro	Glu	Glu	Val	Val	Leu	Gln	Ala	Ser	Val	Ser	Ser	Tyr	His	
			85					90						95		
Leu	Phe	Arg	Asp	Val	Ala	Glu	Val	Thr	Ala	Phe	Arg	Gly	Ser	Leu	Leu	
			100					105					110			
Ser	Trp	Tyr	Asp	Gln	Glu	Lys	Arg	Asp	Leu	Pro	Trp	Arg	Arg	Arg	Ala	
		115					120					125				
Glu	Asp	Glu	Met	Asp	Leu	Asp	Arg	Arg	Ala	Tyr	Ala	Val	Trp	Val	Ser	
	130					135					140					
Glu	Val	Met	Leu	Gln	Gln	Thr	Gln	Val	Ala	Thr	Val	Ile	Asn	Tyr	Tyr	
145					150					155					160	
Thr	Gly	Trp	Met	Gln	Lys	Trp	Pro	Thr	Leu	Gln	Asp	Leu	Ala	Ser	Ala	
			165						170					175		
Ser	Leu	Glu	Glu	Val	Asn	Gln	Leu	Trp	Ala	Gly	Leu	Gly	Tyr	Tyr	Ser	
		180						185					190			
Arg	Gly	Arg	Arg	Leu	Gln	Glu	Gly	Ala	Arg	Lys	Val	Val	Glu	Glu	Leu	
		195					200						205			
Gly	Gly	His	Met	Pro	Arg	Thr	Ala	Glu	Thr	Leu	Gln	Gln	Leu	Leu	Pro	
	210					215					220					
Gly	Val	Gly	Arg	Tyr	Thr	Ala	Gly	Ala	Ile	Ala	Ser	Ile	Ala	Phe	Gly	
225					230				235					240		
Gln	Ala	Thr	Gly	Val	Val	Asp	Gly	Asn	Val	Ala	Arg	Val	Leu	Cys	Arg	
			245					250						255		
Val	Arg	Ala	Ile	Gly	Ala	Asp	Pro	Ser	Ser	Thr	Leu	Val	Ser	Gln	Gln	
		260						265					270			
Leu	Trp	Gly	Leu	Ala	Gln	Gln	Leu	Val	Asp	Pro	Ala	Arg	Pro	Gly	Asp	
		275					280					285				
Phe	Asn	Gln	Ala	Ala	Met	Glu	Leu	Gly	Ala	Thr	Val	Cys	Thr	Pro	Gln	
	290					295						300				
Arg	Pro	Leu	Cys	Ser	Gln	Cys	Pro	Val	Glu	Ser	Leu	Cys	Arg	Ala	Arg	
305					310					315					320	
Gln	Arg	Val	Glu	Gln	Glu	Gln	Leu	Leu	Ala	Ser	Gly	Ser	Leu	Ser	Gly	
			325						330					335		



1370

Ser Pro Asp Val Glu Glu Cys Ala Pro Asn Thr Gly Gln Cys His Leu  
 340 345 350  
 Cys Leu Pro Pro Ser Glu Pro Trp Asp Gln Thr Leu Gly Val Val Asn  
 355 360 365  
 Phe Pro Arg Lys Ala Ser Arg Lys Pro Pro Arg Glu Glu Ser Ser Ala  
 370 375 380  
 Thr Cys Val Leu Glu Gln Pro Gly Ala Leu Gly Ala Gln Ile Leu Leu  
 385 390 395 400  
 Val Gln Arg Pro Asn Ser Gly Leu Leu Ala Gly Leu Trp Glu Phe Pro  
 405 410 415  
 Ser Val Thr Trp Glu Pro Ser Glu Gln Leu Gln Arg Lys Ala Leu Leu  
 420 425 430  
 Gln Glu Leu Gln Arg Xaa Ala Gly Pro Leu Pro Ala Thr His Xaa Arg  
 435 440 445  
 His Leu Gly Glu Val Val His Thr Phe Ser His Ile Lys Leu Thr Tyr  
 450 455 460  
 Gln Val Tyr Gly Leu Ala Leu Glu Gly Gln Thr Pro Val Thr Thr Val  
 465 470 475 480  
 Pro Pro Gly Ala Arg Cys  
 485

&lt;210&gt; 1327

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1327

Lys Thr Leu Phe Thr Tyr Ser Phe His Gly Tyr Asn Thr Leu Ala Asp  
 1 5 10 15  
 Phe Leu Leu Ala Leu Gly Ala Met Ile Leu Ile Thr Phe Cys Lys Val  
 20 25 30  
 Thr Asn Val Ile His Ser Thr Leu Cys Gly Ser His Leu Phe Arg Leu  
 35 40 45  
 Met Cys Phe Gly Glu Arg Lys Lys Phe Leu Ala Glu Tyr Tyr Phe Glu  
 50 55 60  
 Leu Ser Arg Thr Leu Ser His Gln Arg Gln Phe Phe Ser Val Gln Phe

1371

65                                      70                                      75                                      80

Pro Ile Pro Asp Asn Leu Leu Lys  
85

&lt;210&gt; 1328

&lt;211&gt; 424

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1328

Ile Arg Val Ser Phe Met Asn Asn Gln Lys Gln Gln Lys Pro Thr Leu  
1                                      5                                      10                                      15

Ser Gly Gln Arg Phe Lys Thr Arg Lys Arg Asp Glu Lys Glu Arg Phe  
20                                      25                                      30

Asp Pro Thr Gln Phe Gln Asp Cys Ile Ile Gln Gly Leu Thr Glu Thr  
35                                      40                                      45

Gly Thr Asp Leu Glu Ala Val Ala Lys Phe Leu Asp Ala Ser Gly Ala  
50                                      55                                      60

Lys Leu Asp Tyr Arg Arg Tyr Ala Glu Thr Leu Phe Asp Ile Leu Val  
65                                      70                                      75                                      80

Ala Gly Gly Met Leu Ala Pro Gly Gly Thr Leu Ala Asp Asp Met Met  
85                                      90                                      95

Arg Thr Asp Val Cys Val Phe Ala Ala Gln Glu Asp Leu Glu Thr Met  
100                                      105                                      110

Gln Ala Phe Ala Gln Val Phe Asn Lys Leu Ile Arg Arg Tyr Lys Tyr  
115                                      120                                      125

Leu Glu Lys Gly Phe Glu Asp Glu Val Lys Lys Leu Leu Leu Phe Leu  
130                                      135                                      140

Lys Gly Phe Ser Glu Ser Glu Arg Asn Lys Leu Ala Met Leu Thr Gly  
145                                      150                                      155                                      160

Val Leu Leu Ala Asn Gly Thr Leu Asn Ala Ser Ile Leu Asn Ser Leu  
165                                      170                                      175

Tyr Asn Glu Asn Leu Val Lys Glu Gly Val Ser Ala Ala Phe Ala Val  
180                                      185                                      190

Lys Leu Phe Lys Ser Trp Ile Asn Glu Lys Asp Ile Asn Ala Val Ala  
195                                      200                                      205

1372

Ala Ser Leu Arg Lys Val Ser Met Asp Asn Arg Leu Met Glu Leu Phe  
 210 215 220

Pro Ala Asn Lys Gln Ser Val Glu His Phe Thr Lys Tyr Phe Thr Glu  
 225 230 235 240

Ala Gly Leu Lys Glu Leu Ser Glu Tyr Val Arg Asn Gln Gln Thr Ile  
 245 250 255

Gly Ala Arg Lys Glu Leu Gln Lys Glu Leu Gln Glu Gln Met Ser Arg  
 260 265 270

Gly Asp Pro Phe Lys Asp Ile Ile Leu Tyr Val Lys Glu Glu Met Lys  
 275 280 285

Lys Asn Asn Ile Pro Glu Pro Val Val Ile Gly Ile Val Trp Ser Ser  
 290 295 300

Val Met Ser Thr Val Glu Trp Asn Lys Lys Glu Glu Leu Val Ala Glu  
 305 310 315 320

Gln Ala Ile Lys His Leu Lys Gln Tyr Ser Pro Leu Leu Ala Ala Phe  
 325 330 335

Thr Thr Gln Gly Gln Ser Glu Leu Thr Leu Leu Leu Lys Ile Gln Glu  
 340 345 350

Tyr Cys Tyr Asp Asn Ile His Phe Met Lys Ala Phe Gln Lys Ile Val  
 355 360 365

Val Leu Phe Tyr Lys Ala Glu Val Leu Ser Glu Glu Pro Ile Leu Lys  
 370 375 380

Trp Tyr Lys Asp Ala His Val Ala Lys Gly Lys Ser Val Phe Leu Glu  
 385 390 395 400

Gln Met Lys Lys Phe Val Glu Trp Leu Lys Asn Ala Glu Glu Glu Ser  
 405 410 415

Glu Ser Glu Ala Glu Glu Gly Asp  
 420

&lt;210&gt; 1329

&lt;211&gt; 558

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1329

1373

Trp Tyr Cys Ser Val Gly Leu Ala Ser Thr Ala Gly Glu Gln Ala Ala  
 1 5 10 15  
 Ala Val Ala Ala Ala Phe Ser Leu His Pro Asp Tyr Ala Met Leu Gly  
 20 25 30  
 Phe Val Gly Arg Val Ala Ala Ala Pro Ala Ser Gly Ala Leu Arg Arg  
 35 40 45  
 Leu Thr Pro Ser Ala Ser Leu Pro Pro Ala Gln Leu Leu Leu Arg Ala  
 50 55 60  
 Ala Pro Thr Ala Val His Pro Val Arg Asp Tyr Ala Ala Gln Thr Ser  
 65 70 75 80  
 Pro Ser Pro Lys Ala Gly Ala Ala Thr Gly Arg Ile Val Ala Val Ile  
 85 90 95  
 Gly Ala Val Val Asp Val Gln Phe Asp Glu Gly Leu Pro Pro Ile Leu  
 100 105 110  
 Asn Ala Leu Glu Val Gln Gly Arg Glu Thr Arg Leu Val Leu Glu Val  
 115 120 125  
 Ala Gln His Leu Gly Glu Ser Thr Val Arg Thr Ile Ala Met Asp Gly  
 130 135 140  
 Thr Glu Gly Leu Val Arg Gly Gln Lys Val Leu Asp Ser Gly Ala Pro  
 145 150 155 160  
 Ile Lys Ile Pro Val Gly Pro Glu Thr Leu Gly Arg Ile Met Asn Val  
 165 170 175  
 Ile Gly Glu Pro Ile Asp Glu Arg Gly Pro Ile Lys Thr Lys Gln Phe  
 180 185 190  
 Ala Pro Ile His Ala Glu Ala Pro Glu Phe Met Glu Met Ser Val Glu  
 195 200 205  
 Gln Glu Ile Leu Val Thr Gly Ile Lys Val Val Asp Leu Leu Ala Pro  
 210 215 220  
 Tyr Ala Lys Gly Gly Lys Ile Gly Leu Phe Gly Gly Ala Gly Val Gly  
 225 230 235 240  
 Lys Thr Val Leu Ile Met Glu Leu Ile Asn Asn Val Ala Lys Ala His  
 245 250 255  
 Gly Gly Tyr Ser Val Phe Ala Gly Val Gly Glu Arg Thr Arg Glu Gly  
 260 265 270

1374

Asn Asp Leu Tyr His Glu Met Ile Glu Ser Gly Val Ile Asn Leu Lys  
 275 280 285

Asp Ala Thr Ser Lys Val Ala Leu Val Tyr Gly Gln Met Asn Glu Pro  
 290 295 300

Pro Gly Ala Arg Ala Arg Val Ala Leu Thr Gly Leu Thr Val Ala Glu  
 305 310 315 320

Tyr Phe Arg Asp Gln Glu Gly Gln Asp Val Leu Leu Phe Ile Asp Asn  
 325 330 335

Ile Phe Arg Phe Thr Gln Ala Gly Ser Glu Val Ser Ala Leu Leu Gly  
 340 345 350

Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu Ala Thr Asp Met  
 355 360 365

Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys Gly Ser Ile Thr  
 370 375 380

Ser Val Gln Ala Ile Tyr Val Pro Ala Asp Asp Leu Thr Asp Pro Ala  
 385 390 395 400

Pro Ala Thr Thr Phe Ala His Leu Asp Ala Thr Thr Val Leu Ser Arg  
 405 410 415

Ala Ile Ala Glu Leu Gly Ile Tyr Pro Ala Val Asp Pro Leu Asp Ser  
 420 425 430

Thr Ser Arg Ile Met Asp Pro Asn Ile Val Gly Ser Glu His Tyr Asp  
 435 440 445

Val Ala Arg Gly Val Gln Lys Ile Leu Gln Asp Tyr Lys Ser Leu Gln  
 450 455 460

Asp Ile Ile Ala Ile Leu Gly Met Asp Glu Leu Ser Glu Glu Asp Lys  
 465 470 475 480

Leu Thr Val Ser Arg Ala Arg Lys Ile Gln Arg Phe Leu Ser Gln Pro  
 485 490 495

Phe Gln Val Ala Glu Val Phe Thr Gly His Met Gly Lys Leu Val Pro  
 500 505 510

Leu Lys Glu Thr Ile Lys Gly Phe Gln Gln Ile Leu Ala Gly Glu Tyr  
 515 520 525

Asp His Leu Pro Glu Gln Ala Phe Tyr Met Val Gly Pro Ile Glu Glu  
 530 535 540

1375

Ala Val Ala Lys Ala Asp Lys Leu Ala Glu Glu His Ser Ser  
 545 550 555

<210> 1330

<211> 134

<212> PRT

<213> Homo sapiens

<400> 1330

Thr Thr Pro Leu Ser Gln Ile Val Ala Arg Gly Leu Ile Ala Arg Gly  
 1 5 10 15

Val Pro Gly Ala Ile Val Asn Val Ser Ser Gln Cys Ser Gln Arg Ala  
 20 25 30

Val Thr Asn His Ser Val Tyr Cys Ser Thr Lys Gly Ala Leu Asp Met  
 35 40 45

Leu Thr Lys Val Met Ala Leu Glu Leu Gly Pro His Lys Ile Arg Val  
 50 55 60

Asn Ala Val Asn Pro Thr Val Val Met Thr Ser Met Gly Gln Ala Thr  
 65 70 75 80

Trp Ser Asp Pro His Lys Ala Lys Thr Met Leu Asn Arg Ile Pro Leu  
 85 90 95

Gly Lys Phe Ala Glu Val Glu His Val Val Asn Ala Ile Leu Phe Leu  
 100 105 110

Leu Ser Asp Arg Ser Gly Met Thr Thr Gly Ser Thr Leu Pro Val Glu  
 115 120 125

Gly Gly Phe Trp Ala Cys  
 130

<210> 1331

<211> 188

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (135)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

1376

&lt;221&gt; SITE

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1331

Ile Arg His Glu Pro Ser Arg Cys Arg Ser Arg Thr Ala Ala Val Cys  
 1 5 10 15

Ser Pro Pro Pro Cys Pro Pro Trp Arg Arg Pro Arg Gly Pro Trp Thr  
 20 25 30

Ala Lys Ser Pro Pro Trp Pro Pro Ala Arg Pro Arg Trp Gln Trp Thr  
 35 40 45

Arg Ala Leu Asn Ser Thr Ala Ala Pro Pro Arg Ser Pro Pro Ala Pro  
 50 55 60

Cys Pro Cys Arg Pro Asn Ser Ala Arg Arg Lys Arg Arg Pro Pro Ala  
 65 70 75 80

Asn Cys Arg Ala Ser Ser Gly Trp Leu Ala Ala Trp Lys Pro Ser Arg  
 85 90 95

Thr Gly Pro Ala Ala Arg Pro Arg Arg Pro Val Pro Asp Thr Ser Phe  
 100 105 110

His Ser Ser Pro Val Gln Ala Ala Val His Phe Val Gly Tyr Lys Ile  
 115 120 125

Asn His Gly Pro Ala Met Xaa Leu Xaa Phe Leu Leu Gln Leu Arg Leu  
 130 135 140

Gly Arg Gly Pro Gly Leu Pro Arg Glu Asn Val Leu Glu Thr Ala Pro  
 145 150 155 160

Val Phe Leu Ala Trp Phe Ile Cys Pro Gly Ser Gly Ser Asp Ser Gly  
 165 170 175

Gly Ser Glu Thr Ser Val Ala Leu Ser Tyr Trp Gly  
 180 185

&lt;210&gt; 1332

&lt;211&gt; 237

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

1377

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1332

Asp Asp Arg Arg Xaa Asp Ala Glu Ala Asp Lys Met Ala Ala Ala Ala  
 1 5 10 15

Val Gln Gly Gly Arg Ser Gly Gly Ser Gly Gly Cys Ser Gly Ala Gly  
 20 25 30

Gly Ala Ser Asn Cys Gly Thr Gly Ser Gly Arg Ser Gly Leu Leu Asp  
 35 40 45

Lys Trp Lys Ile Asp Asp Lys Pro Val Lys Ile Asp Lys Trp Asp Gly  
 50 55 60

Ser Ala Val Lys Asn Ser Leu Asp Asp Ser Ala Lys Lys Val Leu Leu  
 65 70 75 80

Glu Lys Tyr Lys Tyr Val Glu Asn Phe Gly Leu Ile Asp Gly Arg Leu  
 85 90 95

Thr Ile Cys Thr Ile Ser Cys Phe Phe Ala Ile Val Ala Leu Ile Trp  
 100 105 110

Asp Tyr Met His Pro Phe Pro Glu Ser Lys Pro Val Leu Ala Leu Cys  
 115 120 125

Val Ile Ser Tyr Phe Val Met Met Gly Ile Leu Thr Ile Tyr Thr Ser  
 130 135 140

Tyr Lys Glu Lys Ser Ile Phe Leu Val Ala His Arg Lys Asp Pro Thr  
 145 150 155 160

Gly Met Asp Pro Asp Asp Ile Trp Gln Leu Ser Ser Ser Leu Lys Arg  
 165 170 175

Phe Asp Asp Lys Tyr Thr Leu Lys Leu Thr Phe Ile Ser Gly Arg Thr  
 180 185 190

Lys Gln Gln Arg Glu Ala Glu Phe Thr Lys Ser Ile Ala Lys Phe Phe  
 195 200 205

Asp His Ser Gly Thr Leu Val Met Asp Ala Tyr Glu Pro Glu Ile Ser  
 210 215 220

Arg Leu His Asp Ser Leu Ala Ile Glu Arg Lys Ile Lys  
 225 230 235

&lt;210&gt; 1333



1378

&lt;211&gt; 56

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1333

Thr Thr Ala Asn Pro Leu Lys Thr Arg Gly Leu Ala Leu Val Ala Gln  
 1 5 10 15

Pro Lys Val Ala Leu Gln Ile Phe Glu Arg Ala Thr Ala Thr Phe Leu  
 20 25 30

Pro Ser Gln Leu Ser Leu Asp Phe Ser Glu Ser Gly Tyr Cys Tyr Pro  
 35 40 45

Asn Val Cys Leu Tyr Glu Cys Ile  
 50 55

&lt;210&gt; 1334

&lt;211&gt; 207

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1334

Ser His Pro Ala Cys Ala Lys Val Glu Tyr Ala Tyr Ser Asp Asn Ser  
 1 5 10 15

Leu Asp Pro Asp Asp Glu Asp Ser Asp Tyr His Gln Glu Ala Tyr Lys  
 20 25 30

Glu Ser Tyr Lys Asp Arg Arg Arg Arg Ala His Thr Gln Ala Glu Gln  
 35 40 45

Lys Arg Arg Asp Ala Ile Lys Arg Gly Tyr Asp Asp Leu Gln Thr Ile  
 50 55 60

Val Pro Thr Cys Gln Gln Gln Asp Phe Ser Ile Gly Ser Gln Lys Leu  
 65 70 75 80

Ser Lys Ala Ile Val Leu Gln Lys Thr Ile Asp Tyr Ile Gln Phe Leu  
 85 90 95

His Lys Glu Lys Lys Lys Gln Glu Glu Glu Val Ser Thr Leu Arg Lys  
 100 105 110

Asp Val Thr Ala Leu Lys Ile Met Lys Val Asn Tyr Glu Gln Ile Val  
 115 120 125

Lys Ala His Gln Asp Asn Pro His Glu Gly Glu Asp Gln Val Ser Asp  
 130 135 140

1379

Gln Val Lys Phe Asn Val Phe Gln Gly Ile Met Asp Ser Leu Phe Gln  
 145 150 155 160

Ser Phe Asn Ala Ser Ile Ser Val Ala Ser Phe Gln Glu Leu Ser Ala  
 165 170 175

Cys Val Phe Ser Trp Ile Glu Glu His Cys Lys Pro Gln Thr Leu Arg  
 180 185 190

Glu Ile Val Ile Gly Val Leu His Gln Leu Lys Asn Gln Leu Tyr  
 195 200 205

<210> 1335

<211> 1005

<212> PRT

<213> Homo sapiens

<400> 1335

Arg Val Leu Gln Tyr Val Val Pro Glu Val Lys Asp Leu Tyr Asn Trp  
 1 5 10 15

Leu Glu Val Glu Phe Asn Pro Leu Lys Leu Cys Glu Arg Val Thr Lys  
 20 25 30

Val Leu Asn Trp Val Arg Glu Gln Pro Glu Lys Glu Pro Glu Leu Gln  
 35 40 45

Gln Tyr Val Pro Gln Leu Gln Asn Asn Thr Ile Leu Arg Leu Leu Gln  
 50 55 60

Gln Val Ser Gln Ile Tyr Gln Ser Ile Glu Phe Ser Arg Leu Thr Ser  
 65 70 75 80

Leu Val Pro Phe Val Asp Ala Phe Gln Leu Glu Arg Ala Ile Val Asp  
 85 90 95

Ala Ala Arg His Cys Asp Leu Gln Val Arg Ile Asp His Thr Ser Arg  
 100 105 110

Thr Leu Ser Phe Gly Ser Asp Leu Asn Tyr Ala Thr Arg Glu Asp Ala  
 115 120 125

Pro Ile Gly Pro His Leu Gln Ser Met Pro Ser Glu Gln Ile Arg Asn  
 130 135 140

Gln Leu Thr Ala Met Ser Ser Val Leu Ala Lys Ala Leu Glu Val Ile  
 145 150 155 160

1380

Lys	Pro	Ala	His	Ile	Leu	Gln	Glu	Lys	Glu	Glu	Gln	His	Gln	Leu	Ala	165	170	175	
Val	Thr	Ala	Tyr	Leu	Lys	Asn	Ser	Arg	Lys	Glu	His	Gln	Arg	Ile	Leu	180	185	190	
Ala	Arg	Arg	Gln	Thr	Ile	Glu	Glu	Arg	Lys	Glu	Arg	Leu	Glu	Ser	Leu	195	200	205	
Asn	Ile	Gln	Arg	Glu	Lys	Glu	Glu	Leu	Glu	Gln	Arg	Glu	Ala	Glu	Leu	210	215	220	
Gln	Lys	Val	Arg	Lys	Ala	Glu	Glu	Glu	Arg	Leu	Arg	Gln	Glu	Ala	Lys	225	230	235	240
Glu	Arg	Glu	Lys	Glu	Arg	Ile	Leu	Gln	Glu	His	Glu	Gln	Ile	Lys	Lys	245	250	255	
Lys	Thr	Val	Arg	Glu	Arg	Leu	Glu	Gln	Ile	Lys	Lys	Thr	Glu	Leu	Gly	260	265	270	
Ala	Lys	Ala	Phe	Lys	Asp	Ile	Asp	Ile	Glu	Asp	Leu	Glu	Glu	Leu	Asp	275	280	285	
Pro	Asp	Phe	Ile	Met	Ala	Lys	Gln	Val	Glu	Gln	Leu	Glu	Lys	Glu	Lys	290	295	300	
Lys	Glu	Leu	Gln	Glu	Arg	Leu	Lys	Asn	Gln	Glu	Lys	Lys	Ile	Asp	Tyr	305	310	315	320
Phe	Glu	Arg	Ala	Lys	Arg	Leu	Glu	Glu	Ile	Pro	Leu	Ile	Lys	Ser	Ala	325	330	335	
Tyr	Glu	Glu	Gln	Arg	Ile	Lys	Asp	Met	Asp	Leu	Trp	Glu	Gln	Gln	Glu	340	345	350	
Glu	Glu	Arg	Ile	Thr	Thr	Met	Gln	Leu	Glu	Arg	Glu	Lys	Ala	Leu	Glu	355	360	365	
His	Lys	Asn	Arg	Met	Ser	Arg	Met	Leu	Glu	Asp	Arg	Asp	Leu	Phe	Val	370	375	380	
Met	Arg	Leu	Lys	Ala	Ala	Arg	Gln	Ser	Val	Tyr	Glu	Glu	Lys	Leu	Lys	385	390	395	400
Gln	Phe	Glu	Glu	Arg	Leu	Ala	Glu	Glu	Arg	His	Asn	Arg	Leu	Glu	Glu	405	410	415	
Arg	Lys	Arg	Gln	Arg	Lys	Glu	Glu	Arg	Arg	Ile	Thr	Tyr	Tyr	Arg	Glu	420	425	430	

1381

Lys Glu Glu Glu Glu Gln Arg Arg Ala Glu Glu Gln Met Leu Lys Glu  
 435 440 445  
 Arg Glu Glu Arg Glu Arg Ala Glu Arg Ala Lys Arg Glu Glu Glu Leu  
 450 455 460  
 Arg Glu Tyr Gln Glu Arg Val Lys Lys Leu Glu Glu Val Glu Arg Lys  
 465 470 475 480  
 Lys Arg Gln Arg Glu Leu Glu Ile Glu Glu Arg Glu Arg Arg Arg Glu  
 485 490 495  
 Glu Glu Arg Arg Leu Gly Asp Ser Ser Leu Ser Arg Lys Asp Ser Arg  
 500 505 510  
 Trp Gly Asp Arg Asp Ser Glu Gly Thr Trp Arg Lys Gly Pro Glu Ala  
 515 520 525  
 Asp Ser Glu Trp Arg Arg Gly Pro Pro Glu Lys Glu Trp Arg Arg Gly  
 530 535 540  
 Glu Gly Arg Asp Glu Asp Arg Ser His Arg Arg Asp Glu Glu Arg Pro  
 545 550 555 560  
 Arg Arg Leu Gly Asp Asp Glu Asp Arg Glu Pro Ser Leu Arg Pro Asp  
 565 570 575  
 Asp Asp Arg Val Pro Arg Arg Gly Met Asp Asp Asp Arg Gly Pro Arg  
 580 585 590  
 Arg Gly Pro Glu Glu Asp Arg Phe Ser Arg Arg Gly Ala Asp Asp Asp  
 595 600 605  
 Arg Pro Ser Trp Arg Asn Thr Asp Asp Asp Arg Pro Pro Arg Arg Ile  
 610 615 620  
 Ala Asp Glu Asp Arg Gly Asn Trp Arg His Ala Asp Asp Asp Arg Pro  
 625 630 635 640  
 Pro Arg Arg Gly Leu Asp Glu Asp Arg Gly Ser Trp Arg Thr Ala Asp  
 645 650 655  
 Glu Asp Arg Gly Pro Arg Arg Gly Met Asp Asp Asp Arg Gly Pro Arg  
 660 665 670  
 Arg Gly Gly Ala Asp Asp Glu Arg Ser Ser Trp Arg Asn Ala Asp Asp  
 675 680 685  
 Asp Arg Gly Pro Arg Arg Gly Leu Asp Asp Asp Arg Gly Pro Arg Arg  
 690 695 700

1382

Gly Met Asp Asp Asp Arg Gly Pro Arg Arg Gly Met Asp Asp Asp Arg  
 705 710 715 720

Gly Pro Arg Arg Gly Met Asp Asp Asp Arg Gly Pro Arg Arg Gly Leu  
 725 730 735

Asp Asp Asp Arg Gly Pro Trp Arg Asn Ala Asp Asp Asp Arg Ile Pro  
 740 745 750

Arg Arg Gly Ala Glu Asp Asp Arg Gly Pro Trp Arg Asn Met Asp Asp  
 755 760 765

Asp Arg Leu Ser Arg Arg Ala Asp Asp Asp Arg Phe Pro Arg Arg Gly  
 770 775 780

Asp Asp Ser Arg Pro Gly Pro Trp Arg Pro Leu Val Lys Pro Gly Gly  
 785 790 795 800

Trp Arg Glu Lys Glu Lys Ala Arg Glu Glu Ser Trp Gly Pro Pro Arg  
 805 810 815

Glu Ser Arg Pro Ser Glu Glu Arg Glu Trp Asp Arg Glu Lys Glu Arg  
 820 825 830

Asp Arg Asp Asn Gln Asp Arg Glu Glu Asn Asp Lys Asp Pro Glu Arg  
 835 840 845

Glu Arg Asp Arg Glu Arg Asp Val Asp Arg Glu Asp Arg Phe Arg Arg  
 850 855 860

Pro Arg Asp Glu Gly Gly Trp Arg Arg Gly Pro Ala Glu Glu Ser Ser  
 865 870 875 880

Ser Trp Arg Asp Ser Ser Arg Arg Asp Asp Arg Asp Arg Asp Asp Arg  
 885 890 895

Arg Arg Glu Arg Asp Asp Arg Arg Asp Leu Arg Glu Arg Arg Asp Leu  
 900 905 910

Arg Asp Asp Arg Asp Arg Arg Gly Pro Pro Leu Arg Ser Glu Arg Glu  
 915 920 925

Glu Val Ser Ser Trp Arg Arg Ala Asp Asp Arg Lys Asp Asp Arg Val  
 930 935 940

Glu Glu Arg Asp Pro Pro Arg Arg Val Pro Pro Pro Ala Leu Ser Arg  
 945 950 955 960

Asp Arg Glu Arg Asp Arg Asp Arg Glu Arg Glu Gly Glu Lys Glu Lys  
 965 970 975

1383

Ala Ser Trp Arg Ala Glu Lys Asp Arg Glu Ser Leu Arg Arg Thr Lys  
980 985 990

Asn Glu Thr Asp Glu Asp Gly Trp Thr Thr Val Arg Arg  
995 1000 1005

&lt;210&gt; 1336

&lt;211&gt; 231

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (73)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (79)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (83)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (118)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1336

Ala Gly Ile His Pro Met Asn Ser Ile Ser Ser Leu Asp Arg Thr Arg  
1 5 10 15

1384

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Met Met Thr Pro Phe Met Gly Ile Ser Pro Leu Pro Gly Gly Glu Arg
      20                      25                      30

Phe Pro Tyr Pro Ser Phe His Trp Asp Pro Ile Arg Asp Pro Leu Arg
      35                      40                      45

Asp Pro Tyr Xaa Glu Leu Asp Ile His Arg Arg Asp Pro Leu Gly Xaa
      50                      55                      60

Asp Phe Leu Leu Arg Asn Asp Pro Xaa His Arg Leu Ser Thr Xaa Arg
      65                      70                      75                      80

Leu Xaa Xaa Ala Asp Arg Ser Phe Arg Asp Arg Glu Pro His Asp Tyr
      85                      90                      95

Ser His His His His His His His His Pro Leu Ser Val Asp Pro Arg
      100                     105                     110

Arg Glu His Glu Arg Xaa Gly His Leu Asp Glu Arg Glu Arg Leu His
      115                     120                     125

Met Leu Arg Glu Asp Tyr Glu His Thr Arg Leu His Ser Val His Pro
      130                     135                     140

Ala Ser Leu Asp Gly His Leu Pro His Pro Ser Leu Ile Thr Pro Gly
      145                     150                     155                     160

Leu Pro Ser Met His Tyr Pro Arg Ile Ser Pro Thr Ala Gly Asn Gln
      165                     170                     175

Asn Gly Leu Leu Asn Lys Thr Pro Pro Thr Ala Ala Leu Ser Ala Pro
      180                     185                     190

Pro Pro Leu Ile Ser Thr Leu Gly Gly Arg Pro Val Ser Pro Arg Arg
      195                     200                     205

Thr Thr Pro Leu Ser Ala Glu Ile Arg Glu Arg Pro Pro Ser His Thr
      210                     215                     220

Leu Lys Asp Ile Glu Ala Arg
      225                     230

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&lt;210&gt; 1337

&lt;211&gt; 155

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1337

1385

Gly Val Glu Gly Leu Lys Asp Ala Gln Met Arg Asp Leu Leu Ser Pro  
 1 5 10 15  
 Pro Thr Asp Asn Arg Pro Gly Gln Met Asp Asn Arg Ser Lys Leu Arg  
 20 25 30  
 Asn Ile Val Glu Leu Arg Leu Ala Gly Leu Asp Ile Thr Asp Ala Ser  
 35 40 45  
 Leu Arg Leu Ile Ile Arg His Met Pro Leu Leu Ser Lys Leu His Leu  
 50 55 60  
 Ser Tyr Cys Asn His Val Thr Asp Gln Ser Ile Asn Leu Leu Thr Ala  
 65 70 75 80  
 Val Gly Thr Thr Thr Arg Asp Ser Leu Thr Glu Ile Asn Leu Ser Asp  
 85 90 95  
 Cys Asn Lys Val Thr Asp Gln Cys Leu Ser Phe Phe Lys Arg Cys Gly  
 100 105 110  
 Asn Ile Cys His Ile Asp Leu Arg Tyr Cys Lys Gln Val Thr Lys Glu  
 115 120 125  
 Gly Cys Glu Gln Phe Ile Ala Glu Met Ser Val Ser Val Gln Phe Gly  
 130 135 140  
 Gln Val Glu Glu Lys Leu Leu Gln Lys Leu Ser  
 145 150 155

&lt;210&gt; 1338

&lt;211&gt; 328

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1338

Asn Asn Ser Gly Val Met Pro Glu Met Pro Glu Asp Met Glu Gln Glu  
 1 5 10 15  
 Glu Val Asn Ile Pro Asn Arg Arg Val Leu Val Thr Gly Ala Thr Gly  
 20 25 30  
 Leu Leu Gly Arg Ala Val His Lys Glu Phe Gln Gln Asn Asn Trp His  
 35 40 45  
 Ala Val Gly Cys Gly Phe Arg Arg Ala Arg Pro Lys Phe Glu Gln Val  
 50 55 60  
 Asn Leu Leu Asp Ser Asn Ala Val His His Ile Ile His Asp Phe Gln



1386

65		70		75		80
Pro His Val Ile Val His Cys Ala Ala Glu Arg Arg Pro Asp Val Val						
	85			90		95
Glu Asn Gln Pro Asp Ala Ala Ser Gln Leu Asn Val Asp Ala Ser Gly						
	100			105		110
Asn Leu Ala Lys Glu Ala Ala Ala Val Gly Ala Phe Leu Ile Tyr Ile						
	115			120		125
Ser Ser Asp Tyr Val Phe Asp Gly Thr Asn Pro Pro Tyr Arg Glu Glu						
	130			135		140
Asp Ile Pro Ala Pro Leu Asn Leu Tyr Gly Lys Thr Lys Leu Asp Gly						
	145			150		155
Glu Lys Ala Val Leu Glu Asn Asn Leu Gly Ala Ala Val Leu Arg Ile						
	165			170		175
Pro Ile Leu Tyr Gly Glu Val Glu Lys Leu Glu Glu Ser Ala Val Thr						
	180			185		190
Val Met Phe Asp Lys Val Gln Phe Ser Asn Lys Ser Ala Asn Met Asp						
	195			200		205
His Trp Gln Gln Arg Phe Pro Thr His Val Lys Asp Val Ala Thr Val						
	210			215		220
Cys Arg Gln Leu Ala Glu Lys Arg Met Leu Asp Pro Ser Ile Lys Gly						
	225			230		235
Thr Phe His Trp Ser Gly Asn Glu Gln Met Thr Lys Tyr Glu Met Ala						
	245			250		255
Cys Ala Ile Ala Asp Ala Phe Asn Leu Pro Ser Ser His Leu Arg Pro						
	260			265		270
Ile Thr Asp Ser Pro Val Leu Gly Ala Gln Arg Pro Arg Asn Ala Gln						
	275			280		285
Leu Asp Cys Ser Lys Leu Glu Thr Leu Gly Ile Gly Gln Arg Thr Pro						
	290			295		300
Phe Arg Ile Gly Ile Lys Glu Ser Leu Trp Pro Phe Leu Ile Asp Lys						
	305			310		315
Arg Trp Arg Gln Thr Val Phe His						
	325					

1387

&lt;210&gt; 1339

&lt;211&gt; 64

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1339

Leu	Xaa	His	Pro	Phe	Ala	Val	Thr	Ser	Tyr	Gly	Lys	Asn	Leu	Tyr	Phe
1				5					10					15	

Thr	Asp	Trp	Lys	Met	Asn	Ser	Val	Val	Ala	Leu	Asp	Leu	Ala	Ile	Ser
			20					25					30		

Lys	Glu	Thr	Asp	Ala	Phe	Gln	Pro	His	Lys	Gln	Thr	Arg	Leu	Tyr	Gly
		35					40					45			

Ile	Thr	Thr	Ala	Leu	Ser	Gln	Cys	Pro	Gln	Ala	Ile	Thr	Thr	Ala	Gln
	50					55					60				

&lt;210&gt; 1340

&lt;211&gt; 155

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1340

Arg	Lys	Met	Ala	Val	Glu	Ser	Arg	Val	Thr	Gln	Glu	Glu	Ile	Lys	Lys
1				5					10					15	

Glu	Pro	Glu	Lys	Pro	Ile	Asp	Arg	Glu	Lys	Thr	Cys	Pro	Leu	Leu	Leu
		20						25					30		

Arg	Val	Phe	Thr	Thr	Asn	Asn	Gly	Arg	His	His	Arg	Met	Asp	Glu	Phe
		35					40					45			

Ser	Arg	Gly	Asn	Val	Pro	Ser	Ser	Glu	Leu	Gln	Ile	Tyr	Thr	Trp	Met
	50					55					60				

Asp	Ala	Thr	Leu	Lys	Glu	Leu	Thr	Ser	Leu	Val	Lys	Glu	Val	Tyr	Pro
65				70					75					80	

Glu	Ala	Arg	Lys	Lys	Gly	Thr	His	Phe	Asn	Phe	Ala	Ile	Val	Phe	Thr
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1388

	85		90		95
Asp Val Lys Arg Pro Gly Tyr Arg Val Lys Glu Ile Gly Ser Thr Met					
100		105		110	
Ser Gly Arg Lys Gly Thr Asp Asp Ser Met Thr Leu Gln Ser Gln Lys					
115		120		125	
Phe Gln Ile Gly Asp Tyr Leu Asp Ile Ala Ile Thr Pro Pro Asn Arg					
130		135		140	
Ala Pro Pro Pro Ser Gly Arg Met Arg Pro Tyr					
145		150		155	

<210> 1341  
 <211> 72  
 <212> PRT  
 <213> Homo sapiens

<400> 1341

Ala Gln Leu Pro Ser Ser Ser Phe Leu Arg His Arg Gly Val Phe Leu			
1	5	10	15
Thr Pro Leu Leu Ala Met Ser Ser His Lys Thr Phe Arg Ile Lys Arg			
20	25	30	
Phe Leu Ala Lys Lys Gln Lys Gln Asn Arg Pro Ile Pro Gln Trp Ile			
35	40	45	
Arg Met Lys Thr Gly Asn Lys Ile Arg Tyr Asn Ser Lys Arg Arg His			
50	55	60	
Trp Arg Arg Thr Lys Leu Gly Leu			
65	70		

<210> 1342  
 <211> 270  
 <212> PRT  
 <213> Homo sapiens

<400> 1342

Leu Lys Val Ala Gln Thr Asp Gly Val Asn Val Asp Met His Leu Lys			
1	5	10	15
Gln Ile Glu Ile Lys Lys Phe Lys Tyr Gly Ile Glu Glu His Gly Lys			
20	25	30	

1389

Val Lys Met Arg Gly Gly Leu Leu Arg Thr Tyr Ile Ile Ser Ile Leu  
 35 40 45  
 Phe Lys Ser Ile Phe Glu Val Ala Phe Leu Leu Ile Gln Trp Tyr Ile  
 50 55 60  
 Tyr Gly Phe Ser Leu Ser Ala Val Tyr Thr Cys Lys Arg Asp Pro Cys  
 65 70 75 80  
 Pro His Gln Val Asp Cys Phe Leu Ser Arg Pro Thr Glu Lys Thr Ile  
 85 90 95  
 Phe Ile Ile Phe Met Leu Val Val Ser Leu Val Ser Leu Ala Leu Asn  
 100 105 110  
 Ile Ile Glu Leu Phe Tyr Val Phe Phe Lys Gly Val Lys Asp Arg Val  
 115 120 125  
 Lys Gly Lys Ser Asp Pro Tyr His Ala Thr Ser Gly Ala Leu Ser Pro  
 130 135 140  
 Ala Lys Asp Cys Gly Ser Gln Lys Tyr Ala Tyr Phe Asn Gly Cys Ser  
 145 150 155 160  
 Ser Pro Thr Ala Pro Leu Ser Pro Met Ser Pro Pro Gly Tyr Lys Leu  
 165 170 175  
 Val Thr Gly Asp Arg Asn Asn Ser Ser Cys Arg Asn Tyr Asn Lys Gln  
 180 185 190  
 Ala Ser Glu Gln Asn Trp Ala Asn Tyr Ser Ala Glu Gln Asn Arg Met  
 195 200 205  
 Gly Gln Ala Gly Ser Thr Ile Ser Asn Ser His Ala Gln Pro Phe Asp  
 210 215 220  
 Phe Pro Asp Asp Asn Gln Asn Ser Lys Lys Leu Ala Ala Gly His Glu  
 225 230 235 240  
 Leu Gln Pro Leu Ala Ile Val Asp Gln Arg Pro Ser Ser Arg Ala Ser  
 245 250 255  
 Ser Arg Ala Ser Ser Arg Pro Arg Pro Asp Asp Leu Glu Ile  
 260 265 270

&lt;210&gt; 1343

&lt;211&gt; 94

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1390

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (55)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1343

Gln Glu Leu Arg Ser Pro Ser Arg Ser Pro Ser Pro Pro Pro Lys Ser  
 1 5 10 15

Pro Pro Trp Thr Thr Gly Gly Ser Leu Cys Glu Gln Leu Ala Phe Arg  
 20 25 30

Lys Pro Leu Ser Val Phe Lys Gln Lys Val Glu Gly Ala Thr Lys Gln  
 35 40 45

Ala Ala Val Arg Ala Ser Xaa Cys Arg Pro Leu Pro Cys Ser Ser Ser  
 50 55 60

Ser Phe Ala Ser Ala Ser Ser Val Met Phe Cys Leu Glu Phe Tyr Leu  
 65 70 75 80

Asp Phe Phe Ser Gly Tyr Phe Ser Val Phe Gln Pro Leu Leu  
 85 90

&lt;210&gt; 1344

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (118)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1344

Tyr Ser Thr Arg Ala Leu Trp Lys Pro Asn His Val His Val Cys Val  
 1 5 10 15

1391

Cys Val Cys Ala Ser Phe Glu Pro Pro Ser Thr Ala Ala Ser Ser His  
                   20                  25                  30  
 Asp Thr Lys Leu Leu Ile Ser Thr Phe Leu Trp Val Ala Gln Gly Leu  
                   35                  40                  45  
 Ile Ala Ser His Ser Ile Thr Arg Ile Glu Ala Arg His Gly Gly Ala  
                   50                  55                  60  
 Cys Leu Val Val Pro Ala Lys Leu Gly Arg Leu Glu Gly Arg Glu Gly  
                   65                  70                  75                  80  
 Ser Leu Trp Ser Pro Gly Arg Leu Glu Gly Trp Gln Trp Ser His Gly  
                   85                  90                  95  
 Ser Gly Gly His Trp His Phe Gln Pro Gly Gly Gly Arg Val Glu Thr  
                   100                  105                  110  
 Phe Val Leu Gln Lys Xaa Lys Lys Lys Xaa Xaa Gly Gly  
                   115                  120                  125

&lt;210&gt; 1345

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1345

Pro Arg Val Arg Arg Leu Arg Glu Asp Asp Arg Arg Gly Phe Leu Ser  
                   1                  5                  10                  15  
 Phe Arg Ala Asp Ser Ala His Ala Ser Met Val Asn Val Pro Lys Thr  
                   20                  25                  30  
 Arg Arg Thr Phe Cys Lys Lys Cys Gly Lys His Gln Pro His Lys Val  
                   35                  40                  45  
 Thr Gln Tyr Lys Lys Gly Lys Asp Ser Leu Tyr Ala Gln Gly Lys Arg  
                   50                  55                  60  
 Arg Tyr Asp Arg Lys Gln Ser Gly Tyr Gly Gly Gln Thr Lys Pro Ile  
                   65                  70                  75                  80  
 Phe Arg Lys Lys Ala Lys Thr Thr Lys Lys Ile Val Leu Arg Leu Glu  
                   85                  90                  95  
 Cys Val Glu Pro Asn Cys Arg Ser Lys Arg Met Leu Ala Ile Lys Arg  
                   100                  105                  110  
 Cys Lys His Phe Glu Leu Gly Gly Asp Lys Lys Arg Lys Gly Gln Val

1392

115                      120                      125  
 Ile Gln Phe  
 130

<210> 1346  
 <211> 75  
 <212> PRT  
 <213> Homo sapiens

<400> 1346  
 Asn Lys Arg Asn Cys Lys Phe Pro Leu Leu Lys Ile Thr Lys Ile Thr  
 1                      5                      10                      15  
 Glu Thr Lys Glu Glu Ile Arg Ile Trp Gly Ile Val Leu Asn Asn Leu  
 20                      25                      30  
 Val Val Lys Lys Asn Asn Cys Ala Cys Leu Asp Leu Asn Lys Pro Pro  
 35                      40                      45  
 Ser Lys Cys Glu Gly Ser Ser Asn Phe Ser Lys His Met Lys Val Leu  
 50                      55                      60  
 Ile His Phe Asp Lys Gly Pro Leu Lys Lys Ser  
 65                      70                      75

<210> 1347  
 <211> 413  
 <212> PRT  
 <213> Homo sapiens

<400> 1347  
 Gly Val Ala Arg Ala Gln Pro Val Pro Ala Val Leu Ser Trp Leu Leu  
 1                      5                      10                      15  
 Ala Leu Leu Arg Cys Ala Ala Thr Met Leu Ser Leu Arg Val Pro Leu  
 20                      25                      30  
 Ala Pro Ile Thr Asp Pro Gln Gln Leu Gln Leu Ser Pro Leu Lys Gly  
 35                      40                      45  
 Leu Ser Leu Val Asp Lys Glu Asn Thr Pro Pro Ala Leu Ser Gly Thr  
 50                      55                      60  
 Arg Val Leu Ala Ser Lys Thr Ala Arg Arg Ile Phe Gln Glu Pro Thr  
 65                      70                      75                      80

1393

Glu	Pro	Lys	Thr	Lys	Ala	Ala	Ala	Pro	Gly	Val	Glu	Asp	Glu	Pro	Leu	85	90	95	
Leu	Arg	Glu	Asn	Pro	Arg	Arg	Phe	Val	Ile	Phe	Pro	Ile	Glu	Tyr	His	100	105	110	
Asp	Ile	Trp	Gln	Met	Tyr	Lys	Lys	Ala	Glu	Ala	Ser	Phe	Trp	Thr	Ala	115	120	125	
Glu	Glu	Val	Asp	Leu	Ser	Lys	Asp	Ile	Gln	His	Trp	Glu	Ser	Leu	Lys	130	135	140	
Pro	Glu	Glu	Arg	Tyr	Phe	Ile	Ser	His	Val	Leu	Ala	Phe	Phe	Ala	Ala	145	150	155	160
Ser	Asp	Gly	Ile	Val	Asn	Glu	Asn	Leu	Val	Glu	Arg	Phe	Ser	Gln	Glu	165	170	175	
Val	Gln	Ile	Thr	Glu	Ala	Arg	Cys	Phe	Tyr	Gly	Phe	Gln	Ile	Ala	Met	180	185	190	
Glu	Asn	Ile	His	Ser	Glu	Met	Tyr	Ser	Leu	Leu	Ile	Asp	Thr	Tyr	Ile	195	200	205	
Lys	Asp	Pro	Lys	Glu	Arg	Glu	Phe	Leu	Phe	Asn	Ala	Ile	Glu	Thr	Met	210	215	220	
Pro	Cys	Val	Lys	Lys	Lys	Ala	Asp	Trp	Ala	Leu	Arg	Trp	Ile	Gly	Asp	225	230	235	240
Lys	Glu	Ala	Thr	Tyr	Gly	Glu	Arg	Val	Val	Ala	Phe	Ala	Ala	Val	Glu	245	250	255	
Gly	Ile	Phe	Phe	Ser	Gly	Ser	Phe	Ala	Ser	Ile	Phe	Trp	Leu	Lys	Lys	260	265	270	
Arg	Gly	Leu	Met	Pro	Gly	Leu	Thr	Phe	Ser	Asn	Glu	Leu	Ile	Ser	Arg	275	280	285	
Asp	Glu	Gly	Leu	His	Cys	Asp	Phe	Ala	Cys	Leu	Met	Phe	Lys	His	Leu	290	295	300	
Val	His	Lys	Pro	Ser	Glu	Glu	Arg	Val	Arg	Glu	Ile	Ile	Ile	Asn	Ala	305	310	315	320
Val	Arg	Ile	Glu	Gln	Glu	Phe	Leu	Thr	Glu	Ala	Leu	Pro	Val	Lys	Leu	325	330	335	
Ile	Gly	Met	Asn	Cys	Thr	Leu	Met	Lys	Gln	Tyr	Ile	Glu	Phe	Val	Ala	340	345	350	



1394

Asp Arg Leu Met Leu Glu Leu Gly Phe Ser Lys Val Phe Arg Val Glu  
 355 360 365

Asn Pro Phe Asp Phe Met Glu Asn Ile Ser Leu Glu Gly Lys Thr Asn  
 370 375 380

Phe Phe Glu Lys Arg Val Gly Glu Tyr Gln Arg Met Gly Val Met Ser  
 385 390 395 400

Ser Pro Thr Glu Asn Ser Phe Thr Leu Asp Ala Asp Phe  
 405 410

<210> 1348

<211> 243

<212> PRT

<213> Homo sapiens

<400> 1348

Thr Gly Asn Lys Met Gln Asp Pro Asn Ala Asp Thr Glu Trp Asn Asp  
 1 5 10 15

Ile Leu Arg Lys Lys Gly Ile Leu Pro Pro Lys Glu Ser Leu Lys Glu  
 20 25 30

Leu Glu Glu Glu Ala Glu Glu Glu Gln Arg Ile Leu Gln Gln Ser Val  
 35 40 45

Val Lys Thr Tyr Glu Asp Met Thr Leu Glu Glu Leu Glu Asp His Glu  
 50 55 60

Asp Glu Phe Asn Glu Glu Asp Glu Arg Ala Ile Glu Met Tyr Arg Arg  
 65 70 75 80

Arg Arg Leu Ala Glu Trp Lys Ala Thr Lys Leu Lys Asn Lys Phe Gly  
 85 90 95

Glu Val Leu Glu Ile Ser Gly Lys Asp Tyr Val Gln Glu Val Thr Lys  
 100 105 110

Ala Gly Glu Gly Leu Trp Val Ile Leu His Leu Tyr Lys Gln Gly Ile  
 115 120 125

Pro Leu Cys Ala Leu Ile Asn Gln His Leu Ser Gly Leu Ala Arg Lys  
 130 135 140

Phe Pro Asp Val Lys Phe Ile Lys Ala Ile Ser Thr Thr Cys Ile Pro  
 145 150 155 160

Asn Tyr Pro Asp Arg Asn Leu Pro Thr Ile Phe Val Tyr Leu Glu Gly

1395

	165		170		175
Asp Ile Lys	Ala Gln Phe Ile Gly	Pro Leu Val Phe Gly Gly Met Asn			
	180	185	190		
Leu Thr Arg	Asp Glu Leu Glu Trp Lys Leu Ser Glu Ser Gly Ala Ile				
	195	200	205		
Met Thr Asp	Leu Glu Glu Asn Pro Lys Lys Pro Ile Glu Asp Val Leu				
	210	215	220		
Leu Ser Ser Val Arg Arg Ser Val Leu Met Lys Arg Asp Ser Asp Ser					
225	230	235	240		
Glu Gly Asp					

&lt;210&gt; 1349

&lt;211&gt; 326

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (142)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1349

Arg Met Ala Thr Pro Leu Pro Pro Pro Ser Pro Arg His Leu Arg Leu			
1	5	10	15
Leu Arg Leu Leu Leu Ser Gly Leu Val Leu Gly Ala Ala Leu Arg Gly			
20	25	30	
Ala Ala Ala Gly His Pro Asp Val Ala Ala Cys Pro Gly Ser Leu Asp			
35	40	45	
Cys Ala Leu Lys Arg Arg Ala Arg Cys Pro Pro Gly Ala His Ala Cys			
50	55	60	
Gly Pro Cys Leu Gln Pro Phe Gln Glu Asp Gln Gln Gly Leu Cys Val			
65	70	75	80
Pro Arg Met Arg Arg Pro Pro Gly Gly Gly Arg Pro Gln Pro Arg Leu			

1396

85										90										95																																			
Glu	Asp	Glu	Ile	Asp	Phe	Leu	Ala	Gln	Glu	Leu	Ala	Arg	Lys	Glu	Ser																																								
			100						105					110																																									
Gly	His	Ser	Thr	Pro	Pro	Leu	Pro	Lys	Asp	Arg	Gln	Arg	Leu	Pro	Glu																																								
		115					120					125																																											
Pro	Ala	Thr	Leu	Gly	Phe	Ser	Ala	Xaa	Gly	Gln	Gly	Leu	Xaa	Leu	Gly																																								
		130				135					140																																												
Leu	Pro	Ser	Thr	Pro	Gly	Thr	Pro	Thr	Pro	Thr	Pro	His	Thr	Ser	Leu																																								
	145				150			155						160																																									
Gly	Ser	Pro	Val	Ser	Ser	Asp	Pro	Val	His	Met	Ser	Pro	Leu	Glu	Pro																																								
			165				170					175																																											
Arg	Gly	Gly	Gln	Gly	Asp	Gly	Leu	Ala	Leu	Val	Leu	Ile	Leu	Ala	Phe																																								
		180				185						190																																											
Cys	Val	Ala	Gly	Ala	Ala	Ala	Leu	Ser	Val	Ala	Ser	Leu	Cys	Trp	Cys																																								
		195				200						205																																											
Arg	Leu	Gln	Arg	Glu	Ile	Arg	Leu	Thr	Gln	Lys	Ala	Asp	Tyr	Ala	Thr																																								
	210				215			220																																															
Ala	Lys	Ala	Pro	Gly	Ser	Pro	Ala	Ala	Pro	Arg	Ile	Ser	Pro	Gly	Asp																																								
	225			230			235						240																																										
Gln	Arg	Leu	Ala	Gln	Ser	Ala	Glu	Met	Tyr	His	Tyr	Gln	His	Gln	Arg																																								
		245				250						255																																											
Gln	Gln	Met	Leu	Cys	Leu	Glu	Arg	His	Lys	Glu	Pro	Pro	Lys	Glu	Leu																																								
		260				265						270																																											
Asp	Thr	Ala	Ser	Ser	Asp	Glu	Glu	Asn	Glu	Asp	Gly	Asp	Phe	Thr	Val																																								
		275				280					285																																												
Tyr	Glu	Cys	Pro	Gly	Leu	Ala	Pro	Thr	Gly	Glu	Met	Glu	Val	Arg	Asn																																								
	290				295			300																																															
Pro	Leu	Phe	Asp	His	Ala	Ala	Leu	Ser	Ala	Pro	Leu	Pro	Ala	Pro	Ser																																								
	305				310			315					320																																										
Ser	Pro	Pro	Ala	Leu	Pro																																																		
			325																																																				

&lt;210&gt; 1350

&lt;211&gt; 62

1397

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1350

Val Lys Ser Asp Thr Pro Pro Cys Val Ser Lys Asn Leu Val Pro Pro  
 1 5 10 15

Leu His Thr Ser Leu Thr Leu Asn Ile Phe His Trp Ile Leu Asp Arg  
 20 25 30

Ala Lys Gly Arg Thr Gly Ala Ser Gly Gly Pro Trp Leu Phe Lys Ser  
 35 40 45

Trp Ile Ile Cys Asp Ser Asn His Lys Phe Leu Ala Asn Phe  
 50 55 60

&lt;210&gt; 1351

&lt;211&gt; 312

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (299)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1351

Glu Pro Arg Pro Gly Cys Gly Asn Lys Met Ala Gly Lys Lys Asn Val  
 1 5 10 15

Leu Ser Ser Leu Ala Val Tyr Ala Glu Asp Ser Glu Pro Glu Ser Asp  
 20 25 30

Gly Glu Ala Gly Ile Glu Ala Val Gly Ser Ala Ala Glu Glu Lys Gly  
 35 40 45

Gly Leu Val Ser Asp Ala Tyr Gly Glu Asp Asp Phe Ser Arg Leu Gly  
 50 55 60

Gly Asp Glu Asp Gly Tyr Glu Glu Glu Glu Asp Glu Asn Ser Arg Gln  
 65 70 75 80

Ser Glu Asp Asp Asp Ser Glu Thr Glu Lys Pro Glu Ala Asp Asp Pro  
 85 90 95

Lys Asp Asn Thr Glu Ala Glu Lys Arg Asp Pro Gln Glu Leu Val Ala  
 100 105 110

Ser Phe Ser Glu Arg Val Arg Asn Met Ser Pro Asp Glu Ile Lys Ile

1398

115	120	125
Pro Pro Glu Pro Pro Gly Arg Cys Ser Asn His Leu Gln Asp Lys Ile		
130	135	140
Gln Lys Leu Tyr Glu Arg Lys Ile Lys Glu Gly Met Asp Met Asn Tyr		
145	150	155
Ile Ile Gln Arg Lys Lys Glu Phe Arg Asn Pro Ser Ile Tyr Glu Lys		
	165	170
		175
Leu Ile Gln Phe Cys Ala Ile Asp Glu Leu Gly Thr Asn Tyr Pro Lys		
	180	185
		190
Asp Met Phe Asp Pro His Gly Trp Ser Glu Asp Ser Tyr Tyr Glu Ala		
	195	200
		205
Leu Ala Lys Ala Gln Lys Ile Glu Met Asp Lys Leu Glu Lys Ala Lys		
	210	215
		220
Lys Glu Arg Thr Lys Ile Glu Phe Val Thr Gly Thr Lys Lys Gly Thr		
225	230	235
		240
Thr Thr Asn Ala Thr Ser Thr Thr Thr Thr Thr Ala Ser Thr Ala Val		
	245	250
		255
Ala Asp Ala Gln Lys Arg Lys Ser Lys Trp Asp Ser Ala Ile Pro Val		
	260	265
		270
Thr Thr Ile Ser Pro Ala His His Pro His His His Ser His Pro Ala		
	275	280
		285
Ser Cys Cys His Gly His His Gln Arg Gln Xaa Ser Lys Asp His Arg		
	290	295
		300
His Leu Cys Cys Gly Ala Pro Leu		
305	310	

&lt;210&gt; 1352

&lt;211&gt; 259

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1352

1399

Leu Leu Asp Ser Leu Lys Xaa Asp Tyr Ala Gly Lys Pro Gln Pro Pro  
 1 5 10 15  
 Ile Lys Ser Glu Arg Arg Asn Pro Pro Ser Tyr Ala Met Ala Gly Lys  
 20 25 30  
 Lys Val Leu Ile Val Tyr Ala His Gln Glu Pro Lys Ser Phe Asn Gly  
 35 40 45  
 Ser Leu Lys Asn Val Ala Val Asp Glu Leu Ser Arg Gln Gly Cys Thr  
 50 55 60  
 Val Thr Val Ser Asp Leu Tyr Ala Met Asn Phe Glu Pro Arg Ala Thr  
 65 70 75 80  
 Asp Lys Asp Ile Thr Gly Thr Leu Ser Asn Pro Glu Val Phe Asn Tyr  
 85 90 95  
 Gly Val Glu Thr His Glu Ala Tyr Lys Gln Arg Ser Leu Ala Ser Asp  
 100 105 110  
 Ile Thr Asp Glu Gln Lys Lys Val Arg Glu Ala Asp Leu Val Ile Phe  
 115 120 125  
 Gln Phe Pro Leu Tyr Trp Phe Ser Val Pro Ala Ile Leu Lys Gly Trp  
 130 135 140  
 Met Asp Arg Val Leu Cys Gln Gly Phe Ala Phe Asp Ile Pro Gly Phe  
 145 150 155 160  
 Tyr Asp Ser Gly Leu Leu Gln Gly Lys Leu Ala Leu Leu Ser Val Thr  
 165 170 175  
 Thr Gly Gly Thr Ala Glu Met Tyr Thr Lys Thr Gly Val Asn Gly Asp  
 180 185 190  
 Ser Arg Tyr Phe Leu Trp Pro Leu Gln His Gly Thr Leu His Phe Cys  
 195 200 205  
 Gly Phe Lys Val Leu Ala Pro Gln Ile Ser Phe Ala Pro Glu Ile Ala  
 210 215 220  
 Ser Glu Glu Glu Arg Lys Gly Met Val Ala Ala Trp Ser Gln Arg Leu  
 225 230 235 240  
 Gln Thr Ile Trp Lys Glu Glu Pro Ile Pro Cys Thr Ala His Trp His  
 245 250 255  
 Phe Gly Gln

1400

&lt;210&gt; 1353

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1353

Asp Leu Ala Ser Glu Glu His Phe Phe Ser Val Lys Phe Leu Tyr Leu  
1 5 10 15

Lys Ile Gln Lys Tyr Phe Arg Ile Leu Leu Ile Leu Ser Pro Val Phe  
20 25 30

Thr Ser Phe Trp Lys Thr Cys Ile Thr Met Ser Leu Glu Lys Gly Gln  
35 40 45

Arg Lys Ala Phe His Val Lys Ile Arg Ser Leu Ala Ile Ser Asn Pro  
50 55 60

Val Leu Phe Ser Leu His Phe Phe  
65 70

&lt;210&gt; 1354

&lt;211&gt; 301

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1354

Lys Arg Arg Arg Arg Leu Glu Gln Arg Gln Gln Pro Asp Glu Gln Arg  
1 5 10 15

Arg Arg Ser Gly Ala Met Val Lys Met Ala Ala Ala Gly Gly Gly Gly  
20 25 30

Gly Gly Gly Arg Tyr Tyr Gly Gly Gly Ser Glu Gly Gly Arg Ala Pro  
35 40 45

Lys Arg Leu Lys Thr Asp Asn Ala Gly Asp Gln His Gly Gly Gly Gly  
50 55 60

Gly Gly Gly Gly Gly Ala Gly Ala Ala Gly Gly Gly Gly Gly Glu  
65 70 75 80

Asn Tyr Asp Asp Pro His Lys Thr Pro Ala Ser Pro Val Val His Ile  
85 90 95

Arg Gly Leu Ile Asp Gly Val Val Glu Ala Asp Leu Val Glu Ala Leu  
100 105 110

1401

Gln Glu Phe Gly Pro Ile Ser Tyr Val Val Val Met Pro Lys Lys Arg  
 115 120 125

Gln Ala Leu Val Glu Phe Glu Asp Val Leu Gly Ala Cys Asn Ala Val  
 130 135 140

Asn Tyr Ala Ala Asp Asn Gln Ile Tyr Ile Ala Gly His Pro Ala Phe  
 145 150 155 160

Val Asn Tyr Ser Thr Ser Gln Lys Ile Ser Arg Pro Gly Asp Ser Asp  
 165 170 175

Asp Ser Arg Ser Val Asn Ser Val Leu Leu Phe Thr Ile Leu Asn Pro  
 180 185 190

Ile Tyr Ser Ile Thr Thr Asp Val Leu Tyr Thr Ile Cys Asn Pro Cys  
 195 200 205

Gly Pro Val Gln Arg Ile Val Ile Phe Arg Lys Asn Gly Val Gln Ala  
 210 215 220

Met Val Glu Phe Asp Ser Val Gln Ser Ala Gln Arg Ala Lys Ala Ser  
 225 230 235 240

Leu Asn Gly Ala Asp Ile Tyr Ser Gly Cys Cys Thr Leu Lys Ile Glu  
 245 250 255

Tyr Ala Lys Pro Thr Arg Leu Asn Val Phe Lys Asn Asp Gln Asp Thr  
 260 265 270

Trp Asp Tyr Thr Asn Pro Asn Leu Ser Gly Gln Gly Asn Leu Asp Asp  
 275 280 285

His Phe Val Leu Asn Ile Pro Ala Leu Leu Ser Leu Asp  
 290 295 300

&lt;210&gt; 1355

&lt;211&gt; 466

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1355

Asn Thr Val Met Gly Arg Lys Lys Lys Lys Gln Leu Lys Pro Trp Cys  
 1 5 10 15

Trp Tyr Cys Asn Arg Asp Phe Asp Asp Glu Lys Ile Leu Ile Gln His  
 20 25 30



1402

Gln Lys Ala Lys His Phe Lys Cys His Ile Cys His Lys Lys Leu Tyr  
 35 40 45  
 Thr Gly Pro Gly Leu Ala Ile His Cys Met Gln Val His Lys Glu Thr  
 50 55 60  
 Ile Asp Ala Val Pro Asn Ala Ile Pro Gly Arg Thr Asp Ile Glu Leu  
 65 70 75 80  
 Glu Ile Tyr Gly Met Glu Gly Ile Pro Glu Lys Asp Met Asp Glu Arg  
 85 90 95  
 Arg Arg Leu Leu Glu Gln Lys Thr Gln Glu Ser Gln Lys Lys Lys Gln  
 100 105 110  
 Gln Asp Asp Ser Asp Glu Tyr Asp Asp Asp Asp Ser Ala Ala Ser Thr  
 115 120 125  
 Ser Phe Gln Pro Gln Pro Val Gln Pro Gln Gln Gly Tyr Ile Pro Pro  
 130 135 140  
 Met Ala Gln Pro Gly Leu Pro Pro Val Pro Gly Ala Pro Gly Met Pro  
 145 150 155 160  
 Pro Gly Ile Pro Pro Leu Met Pro Gly Val Pro Pro Leu Met Pro Gly  
 165 170 175  
 Met Pro Pro Val Met Pro Gly Met Pro Pro Gly Leu His His Gln Arg  
 180 185 190  
 Lys Tyr Thr Gln Ser Phe Cys Gly Glu Asn Ile Met Met Pro Met Gly  
 195 200 205  
 Gly Met Met Pro Pro Gly Pro Gly Ile Pro Pro Leu Met Pro Gly Met  
 210 215 220  
 Pro Pro Gly Met Pro Pro Pro Val Pro Arg Pro Gly Ile Pro Pro Met  
 225 230 235 240  
 Thr Gln Ala Gln Ala Val Ser Ala Pro Gly Ile Leu Asn Arg Pro Pro  
 245 250 255  
 Ala Pro Thr Ala Thr Val Pro Ala Pro Gln Pro Pro Val Thr Lys Pro  
 260 265 270  
 Leu Phe Pro Ser Ala Gly Gln Ala Gln Ala Ala Val Gln Gly Pro Val  
 275 280 285  
 Gly Thr Asp Phe Lys Pro Leu Asn Ser Thr Pro Ala Thr Thr Thr Glu  
 290 295 300

1403

Pro Pro Lys Pro Thr Phe Pro Ala Tyr Thr Gln Ser Thr Ala Ser Thr  
305 310 315 320

Thr Ser Thr Thr Asn Ser Thr Ala Ala Lys Pro Ala Ala Ser Ile Thr  
325 330 335

Ser Lys Pro Ala Thr Leu Thr Thr Thr Ser Ala Thr Ser Lys Leu Ile  
340 345 350

His Pro Asp Glu Asp Ile Ser Leu Glu Glu Arg Arg Ala Gln Leu Pro  
355 360 365

Lys Tyr Gln Arg Asn Leu Pro Arg Pro Gly Gln Ala Pro Ile Gly Asn  
370 375 380

Pro Pro Val Gly Pro Ile Gly Gly Met Met Pro Pro Gln Pro Gly Ile  
385 390 395 400

Pro Gln Gln Gln Gly Met Arg Pro Pro Met Pro Pro His Gly Gln Tyr  
405 410 415

Gly Gly His His Gln Gly Met Pro Gly Tyr Leu Pro Gly Ala Met Pro  
420 425 430

Pro Tyr Gly Gln Gly Pro Pro Met Val Pro Pro Tyr Gln Gly Gly Pro  
435 440 445

Pro Arg Pro Pro Met Gly Met Arg Pro Pro Val Met Ser Gln Gly Gly  
450 455 460

Arg Tyr  
465

&lt;210&gt; 1356

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1356

Leu Ser Asp Asp Gln Ser Leu Leu Ile Ile Leu Leu Leu Lys Gly Leu  
1 5 10 15

Leu Thr Asn Leu Ser Phe Thr Pro Cys Gly Pro Cys Tyr Trp Tyr Thr  
20 25 30

Gln Tyr Val Leu Thr Glu Asp Met Asp Phe Ile Cys Ser Ser Ala Gly  
35 40 45

Ile Gly Lys Leu Asp Leu Phe Ser Met Ile Gln Asn Ser Pro Ile Arg

1404

50                      55                      60  
 Arg Leu Glu Lys Glu Glu Leu Tyr Ser Ser Leu Cys Tyr Phe Leu Leu  
 65                      70                      75                      80  
 Pro Phe Leu Phe Leu  
                     85

&lt;210&gt; 1357

&lt;211&gt; 580

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (526)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1357

Asp Ser Xaa Thr Phe Asp Asp Leu Ala Val Asp Phe Thr Pro Glu Glu  
 1                      5                      10                      15

Trp Thr Leu Leu Asp Pro Thr Gln Arg Asn Leu Tyr Arg Asp Val Met  
 20                      25                      30

Leu Glu Asn Tyr Lys Asn Leu Ala Thr Val Gly Tyr Gln Leu Phe Lys  
 35                      40                      45

Pro Ser Leu Ile Ser Trp Leu Glu Gln Glu Glu Ser Arg Thr Val Gln  
 50                      55                      60

Arg Gly Asp Phe Gln Ala Ser Glu Trp Lys Val Gln Leu Lys Thr Lys  
 65                      70                      75                      80

Glu Leu Ala Leu Gln Gln Asp Val Leu Gly Glu Pro Thr Ser Ser Gly  
 85                      90                      95

Ile Gln Met Ile Gly Ser His Asn Gly Gly Glu Val Ser Asp Val Lys  
 100                      105                      110

Gln Cys Gly Asp Val Ser Ser Glu His Ser Cys Leu Lys Thr His Val  
 115                      120                      125

Arg Thr Gln Asn Ser Glu Asn Thr Phe Glu Cys Tyr Leu Tyr Gly Val

1405

130	135	140
Asp Phe Leu Thr Leu His Lys Lys Thr Ser Thr Gly Glu Gln Arg Ser		
145	150	155 160
Val Phe Ser Gln Cys Gly Lys Ala Phe Ser Leu Asn Pro Asp Val Val		
	165	170 175
Cys Gln Arg Thr Cys Thr Gly Glu Lys Ala Phe Asp Cys Ser Asp Ser		
	180	185 190
Gly Lys Ser Phe Ile Asn His Ser His Leu Gln Gly His Leu Arg Thr		
	195	200 205
His Asn Gly Glu Ser Leu His Glu Trp Lys Glu Cys Gly Arg Gly Phe		
	210	215 220
Ile His Ser Thr Asp Leu Ala Val Arg Ile Gln Thr His Arg Ser Glu		
	225	230 235 240
Lys Pro Tyr Lys Cys Lys Glu Cys Gly Lys Gly Phe Arg Tyr Ser Ala		
	245	250 255
Tyr Leu Asn Ile His Met Gly Thr His Thr Gly Asp Asn Pro Tyr Glu		
	260	265 270
Cys Lys Glu Cys Gly Lys Ala Phe Thr Arg Ser Cys Gln Leu Thr Gln		
	275	280 285
His Arg Lys Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Lys Asp Cys		
	290	295 300
Gly Arg Ala Phe Thr Val Ser Ser Cys Leu Ser Gln His Met Lys Ile		
	305	310 315 320
His Val Gly Glu Lys Pro Tyr Glu Cys Lys Glu Cys Gly Ile Ala Phe		
	325	330 335
Thr Arg Ser Ser Gln Leu Thr Glu His Leu Lys Thr His Thr Ala Lys		
	340	345 350
Asp Pro Phe Glu Cys Lys Ile Cys Gly Lys Ser Phe Arg Asn Ser Ser		
	355	360 365
Cys Leu Ser Asp His Phe Arg Ile His Thr Gly Ile Lys Pro Tyr Lys		
	370	375 380
Cys Lys Asp Cys Gly Lys Ala Phe Thr Gln Asn Ser Asp Leu Thr Lys		
	385	390 395 400
His Ala Arg Thr His Ser Gly Glu Arg Pro Tyr Glu Cys Lys Glu Cys		

1406

405	410	415
Gly Lys Ala Phe Ala Arg Ser Ser Arg Leu Ser Glu His Thr Arg Thr		
420	425	430
His Thr Gly Glu Lys Pro Phe Glu Cys Val Lys Cys Gly Lys Ala Phe		
435	440	445
Ala Ile Ser Ser Asn Leu Ser Gly His Leu Arg Ile His Thr Gly Glu		
450	455	460
Lys Pro Phe Glu Cys Leu Glu Cys Gly Lys Ala Phe Thr His Ser Ser		
465	470	475
Ser Leu Asn Asn His Met Arg Thr His Ser Ala Lys Lys Pro Phe Thr		
485	490	495
Cys Met Glu Cys Gly Lys Ala Phe Lys Phe Pro Thr Cys Val Asn Leu		
500	505	510
His Met Arg Ile His Thr Gly Glu Lys Pro Tyr Lys Cys Xaa Gln Cys		
515	520	525
Gly Lys Ser Phe Ser Tyr Ser Asn Ser Phe Gln Leu His Glu Arg Thr		
530	535	540
His Thr Gly Glu Lys Pro Tyr Glu Cys Lys Glu Cys Gly Lys Ala Phe		
545	550	555
Ser Ser Ser Ser Ser Phe Arg Asn His Glu Arg Arg His Ala Asp Glu		
565	570	575
Arg Leu Ser Ala		
580		

&lt;210&gt; 1358

&lt;211&gt; 612

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (134)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (445)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1407

&lt;400&gt; 1358

Glu Val Pro Glu Ala His Arg Ala Ser Pro Arg Glu Gly Thr Ser Gly  
 1 5 10 15  
 Gly Glu Arg Leu Gln Asp Leu Val Lys Ser Lys Met Ser Glu Thr Ser  
 20 25 30  
 Arg Thr Ala Phe Gly Gly Arg Arg Ala Val Pro Pro Asn Asn Ser Asn  
 35 40 45  
 Ala Ala Glu Asp Asp Leu Pro Thr Val Glu Leu Gln Gly Val Val Pro  
 50 55 60  
 Arg Gly Val Asn Leu Gln Asp Asp Ala Val Tyr Leu Asp Asn Glu Lys  
 65 70 75 80  
 Glu Arg Glu Glu Tyr Val Leu Asn Asp Ile Gly Val Ile Phe Tyr Gly  
 85 90 95  
 Glu Val Asn Asp Ile Lys Thr Arg Ser Trp Ser Tyr Gly Gln Phe Glu  
 100 105 110  
 Asp Gly Ile Leu Asp Thr Cys Leu Tyr Val Met Asp Arg Ala Gln Met  
 115 120 125  
 Asp Leu Ser Gly Arg Xaa Asn Pro Ile Lys Val Ser Arg Val Gly Ser  
 130 135 140  
 Ala Met Val Asn Ala Lys Asp Asp Glu Gly Val Leu Val Gly Ser Trp  
 145 150 155 160  
 Asp Asn Ile Tyr Ala Tyr Gly Val Pro Pro Ser Ala Trp Thr Gly Ser  
 165 170 175  
 Val Asp Ile Leu Leu Glu Tyr Arg Ser Ser Glu Asn Pro Val Arg Tyr  
 180 185 190  
 Gly Gln Cys Trp Val Phe Ala Gly Val Phe Asn Thr Phe Leu Arg Cys  
 195 200 205  
 Leu Gly Ile Pro Ala Arg Ile Val Thr Asn Tyr Phe Ser Ala His Asp  
 210 215 220  
 Asn Asp Ala Asn Leu Gln Met Asp Ile Phe Leu Glu Glu Asp Gly Asn  
 225 230 235 240  
 Val Asn Ser Lys Leu Thr Lys Asp Ser Val Trp Asn Tyr His Cys Trp  
 245 250 255  
 Asn Glu Ala Trp Met Thr Arg Pro Asp Leu Pro Val Gly Phe Gly Gly

1408

260	265	270
Trp Gln Ala Val Asp Ser Thr	Pro Gln Glu Asn Ser Asp Gly Met Tyr	
275	280	285
Arg Cys Gly Pro Ala Ser Val	Gln Ala Ile Lys His Gly His Val Cys	
290	295	300
Phe Gln Phe Asp Ala Pro Phe Val	Phe Ala Glu Val Asn Ser Asp Leu	
305	310	315
Ile Tyr Ile Thr Ala Lys Lys Asp	Gly Thr His Val Val Glu Asn Val	
325	330	335
Asp Ala Thr His Ile Gly Lys Leu	Ile Val Thr Lys Gln Ile Gly Gly	
340	345	350
Asp Gly Met Met Asp Ile Thr	Asp Thr Tyr Lys Phe Gln Glu Gly Gln	
355	360	365
Glu Glu Glu Arg Leu Ala Leu Glu	Thr Ala Leu Met Tyr Gly Ala Lys	
370	375	380
Lys Pro Leu Asn Thr Glu Gly Val	Met Lys Ser Arg Ser Asn Val Asp	
385	390	395
Met Asp Phe Glu Val Glu Asn Ala	Val Leu Gly Lys Asp Phe Lys Leu	
405	410	415
Ser Ile Thr Phe Arg Asn Asn Ser	His Asn Arg Tyr Thr Ile Thr Ala	
420	425	430
Tyr Leu Ser Ala Asn Ile Thr	Phe Tyr Thr Gly Val Xaa Lys Ala Glu	
435	440	445
Phe Lys Lys Glu Thr Phe Asp Val	Thr Leu Glu Pro Leu Ser Phe Lys	
450	455	460
Lys Glu Ala Val Leu Ile Gln Ala	Gly Glu Tyr Met Gly Gln Leu Leu	
465	470	475
Glu Gln Ala Ser Leu His Phe Phe	Val Thr Ala Arg Ile Asn Glu Thr	
485	490	495
Arg Asp Val Leu Ala Lys Gln Lys	Ser Thr Val Leu Thr Ile Pro Glu	
500	505	510
Ile Ile Ile Lys Val Arg Gly Thr	Gln Val Val Gly Ser Asp Met Thr	
515	520	525
Val Thr Val Glu Phe Thr Asn Pro	Leu Lys Glu Thr Leu Arg Asn Val	

1409

530                      535                      540

Trp Val His Leu Asp Gly Pro Gly Val Thr Arg Pro Met Lys Lys Met  
545                      550                      555                      560

Phe Arg Glu Ile Arg Pro Asn Ser Thr Val Gln Trp Glu Glu Val Cys  
                    565                      570                      575

Arg Pro Trp Val Ser Gly His Arg Lys Leu Ile Ala Ser Met Ser Ser  
                    580                      585                      590

Asp Ser Leu Arg His Val Tyr Gly Glu Leu Asp Val Gln Ile Gln Arg  
                    595                      600                      605

Arg Pro Ser Met  
610

&lt;210&gt; 1359

&lt;211&gt; 56

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1359

Leu Ser Cys Ile Val Leu Leu Arg Gln Ser Ser Val Lys Leu Tyr Gln  
1                      5                      10                      15

Leu Arg Leu Val Ser Ser Asp Phe His Trp Gly Ile Arg Val Leu Ala  
20                      25                      30

Gly Leu Asn Leu Leu Leu Val Gly Ser Val Phe Leu Met Asn Lys Ser  
35                      40                      45

His Ser Thr Glu Leu Gln Val Ile  
50                      55

&lt;210&gt; 1360

&lt;211&gt; 415

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (368)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE



1410

<222> (374)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (379)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (381)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (384)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (385)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (386)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (389)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (397)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (404)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (405)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (409)

1411

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1360

Gly	Gly	Gly	Gly	Glu	Lys	Met	Ala	Asp	Asp	Pro	Ser	Ala	Ala	Asp	Arg
1				5				10						15	

Asn	Val	Glu	Ile	Trp	Lys	Ile	Lys	Lys	Leu	Ile	Lys	Ser	Leu	Glu	Ala
		20					25						30		

Ala	Arg	Gly	Asn	Gly	Thr	Ser	Met	Ile	Ser	Leu	Ile	Ile	Pro	Pro	Lys
		35					40					45			

Asp	Gln	Ile	Ser	Arg	Val	Ala	Lys	Met	Leu	Ala	Asp	Glu	Phe	Gly	Thr
	50						55				60				

Ala	Ser	Asn	Ile	Lys	Ser	Arg	Val	Asn	Arg	Leu	Ser	Val	Leu	Gly	Ala
65				70						75					80

Ile	Thr	Ser	Val	Gln	Gln	Arg	Leu	Lys	Leu	Tyr	Asn	Lys	Val	Pro	Pro
				85					90					95	

Asn	Gly	Leu	Val	Val	Tyr	Cys	Gly	Thr	Ile	Val	Thr	Glu	Glu	Gly	Lys
		100						105					110		

Glu	Lys	Lys	Val	Asn	Ile	Asp	Phe	Glu	Pro	Phe	Lys	Pro	Ile	Asn	Thr
		115					120					125			

Ser	Leu	Tyr	Leu	Cys	Asp	Asn	Lys	Phe	His	Thr	Glu	Ala	Leu	Thr	Ala
	130						135					140			

Leu	Leu	Ser	Asp	Asp	Ser	Lys	Phe	Gly	Phe	Ile	Val	Ile	Asp	Gly	Ser
145						150				155					160

Gly	Ala	Leu	Phe	Gly	Thr	Leu	Gln	Gly	Asn	Thr	Arg	Glu	Val	Leu	His
			165						170					175	

Lys	Phe	Thr	Val	Asp	Leu	Pro	Lys	Lys	His	Gly	Arg	Gly	Gly	Gln	Ser
			180						185					190	

Ala	Leu	Arg	Phe	Ala	Arg	Leu	Arg	Met	Glu	Lys	Arg	His	Asn	Tyr	Val
		195						200					205		

Arg	Lys	Val	Ala	Glu	Thr	Ala	Val	Gln	Leu	Phe	Ile	Ser	Gly	Asp	Lys
	210							215					220		

Val	Asn	Val	Ala	Gly	Leu	Val	Leu	Ala	Gly	Ser	Ala	Asp	Phe	Lys	Thr
225					230					235					240

Glu	Leu	Ser	Gln	Ser	Asp	Met	Phe	Asp	Gln	Arg	Leu	Gln	Ser	Lys	Val
				245					250					255	

1412

Leu Lys Leu Val Asp Ile Ser Tyr Gly Gly Glu Asn Gly Phe Asn Gln  
                   260                  265                  270  
 Ala Ile Glu Leu Ser Thr Glu Val Leu Ser Asn Val Lys Phe Ile Gln  
                   275                  280                  285  
 Glu Lys Lys Leu Ile Gly Arg Tyr Phe Asp Glu Ile Ser Gln Asp Thr  
                   290                  295                  300  
 Gly Lys Tyr Cys Phe Gly Val Glu Asp Thr Leu Lys Ala Leu Glu Met  
                   305                  310                  315                  320  
 Gly Ala Val Glu Ile Leu Ile Val Tyr Glu Asn Leu Asp Ile Met Arg  
                   325                  330                  335  
 Tyr Val Leu His Cys Gln Gly Thr Glu Glu Glu Lys Ile Leu Tyr Leu  
                   340                  345                  350  
 Thr Pro Glu Gln Glu Lys Asp Lys Ser His Phe Thr Asp Lys Glu Xaa  
                   355                  360                  365  
 Arg Thr Gly Thr Met Xaa Leu Ser Arg Ala Xaa Pro Xaa Leu Glu Xaa  
                   370                  375                  380  
 Xaa Xaa Asn Asn Xaa Lys Lys Leu Gly Leu Pro Trp Xaa Ile Gly Pro  
                   385                  390                  395                  400  
 Ile Asn Ser Xaa Xaa Arg Gly Gln Xaa Trp Lys Arg Ile Gly Gly  
                   405                  410                  415

&lt;210&gt; 1361

&lt;211&gt; 119

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1361

His Ala Ser Ala Asp Ala Trp Ala Asp Ala Trp Val Ala Gly Ser Asp  
   1                  5                  10                  15  
 Phe Ile Lys Thr Ser Thr Gly Lys Glu Thr Val Asn Ala Thr Phe Pro  
                   20                  25                  30  
 Val Ala Ile Val Met Leu Arg Ala Ile Arg Asp Phe Phe Trp Lys Thr  
                   35                  40                  45  
 Gly Asn Lys Ile Gly Phe Lys Pro Ala Gly Gly Ile Arg Ser Ala Lys  
                   50                  55                  60  
 Asp Ser Leu Ala Trp Leu Ser Leu Val Lys Glu Glu Leu Gly Asp Glu

1413

65                                      70                                      75                                      80  
 Trp Leu Lys Pro Glu Leu Phe Arg Ile Gly Ala Ser Thr Leu Leu Ser  
    85                                      90                                      95  
 Asp Ile Glu Arg Gln Ile Tyr His His Val Thr Gly Arg Tyr Ala Ala  
    100                                      105                                      110  
 Tyr His Asp Leu Pro Met Ser  
    115

&lt;210&gt; 1362

&lt;211&gt; 282

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1362

Gly Arg Val Gly Gly Arg Val Gly Gly Arg Val Gly Phe Thr Ala Lys  
   1   5   10   15

Val Trp Asp Ala Val Ser Gly Asp Glu Leu Met Thr Leu Ala His Lys  
    20   25   30

His Xaa Xaa Lys Thr Val Asp Phe Thr Gln Asp Ser Asn Tyr Leu Leu  
    35   40   45

Thr Gly Gly Gln Asp Lys Leu Leu Arg Ile Tyr Asp Leu Asn Lys Pro  
    50   55   60

Glu Ala Glu Pro Lys Glu Ile Ser Gly His Thr Ser Gly Ile Lys Lys  
   65   70   75   80

Ala Leu Trp Cys Ser Glu Asp Lys Gln Ile Leu Ser Ala Asp Asp Lys  
    85   90   95

Thr Val Arg Leu Trp Asp His Ala Thr Met Thr Glu Val Lys Ser Leu  
    100   105   110

Asn Phe Asn Met Ser Val Ser Ser Met Glu Tyr Ile Pro Glu Gly Glu

1414

115                      120                      125  
 Ile Leu Val Ile Thr Tyr Gly Arg Ser Ile Ala Phe His Ser Ala Val  
 130                      135                      140  
 Ser Leu Asp Pro Ile Lys Ser Phe Glu Ala Pro Ala Thr Ile Asn Ser  
 145                      150                      155                      160  
 Ala Ser Leu His Pro Glu Lys Glu Phe Leu Val Ala Gly Gly Glu Asp  
 165                      170                      175  
 Phe Lys Leu Tyr Lys Tyr Asp Tyr Asn Ser Gly Glu Glu Leu Glu Ser  
 180                      185                      190  
 Tyr Lys Gly His Phe Gly Pro Ile His Cys Val Arg Phe Ser Pro Asp  
 195                      200                      205  
 Gly Glu Leu Tyr Ala Ser Gly Ser Glu Asp Gly Thr Leu Arg Leu Trp  
 210                      215                      220  
 Gln Thr Val Val Gly Lys Thr Tyr Gly Leu Trp Lys Cys Val Leu Pro  
 225                      230                      235                      240  
 Glu Glu Asp Ser Gly Glu Leu Ala Lys Pro Lys Ile Gly Phe Pro Glu  
 245                      250                      255  
 Thr Thr Glu Glu Glu Leu Glu Glu Ile Ala Ser Glu Asn Ser Asp Cys  
 260                      265                      270  
 Ile Phe Pro Ser Ala Pro Asp Val Lys Ala  
 275                      280

&lt;210&gt; 1363

&lt;211&gt; 334

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1363

Thr Pro Arg Thr Pro Glu Pro His Lys Pro Gly Leu Ala Met Lys Pro  
 1                      5                      10                      15  
 Gly Phe Ser Pro Arg Gly Gly Gly Phe Gly Gly Arg Gly Gly Phe Gly  
 20                      25                      30  
 Asp Arg Gly Gly Arg Gly Gly Arg Gly Gly Phe Gly Gly Gly Arg Gly  
 35                      40                      45  
 Arg Gly Gly Gly Phe Arg Gly Arg Gly Arg Gly Gly Gly Gly Gly  
 50                      55                      60

1415

Gly Gly Gly Gly Gly Gly Gly Arg Gly Gly Gly Gly Phe His Ser Gly  
 65 70 75 80

Gly Asn Arg Gly Arg Gly Arg Gly Gly Lys Arg Gly Asn Gln Ser Gly  
 85 90 95

Lys Asn Val Met Val Glu Pro His Arg His Glu Gly Val Phe Ile Cys  
 100 105 110

Arg Gly Lys Glu Asp Ala Leu Val Thr Lys Asn Leu Val Pro Gly Glu  
 115 120 125

Ser Val Tyr Gly Glu Lys Arg Val Ser Ile Ser Glu Gly Asp Asp Lys  
 130 135 140

Ile Glu Tyr Arg Ala Trp Asn Pro Phe Arg Ser Lys Leu Ala Ala Ala  
 145 150 155 160

Ile Leu Gly Gly Val Asp Gln Ile His Ile Lys Pro Gly Ala Lys Val  
 165 170 175

Leu Tyr Leu Gly Ala Ala Ser Gly Thr Thr Val Ser His Val Ser Asp  
 180 185 190

Ile Val Gly Pro Asp Gly Leu Val Tyr Ala Val Glu Phe Ser His Arg  
 195 200 205

Ser Gly Arg Asp Leu Ile Asn Leu Ala Lys Lys Arg Thr Asn Ile Ile  
 210 215 220

Pro Val Ile Glu Asp Ala Arg His Pro His Lys Tyr Arg Met Leu Ile  
 225 230 235 240

Ala Met Val Asp Val Ile Phe Ala Asp Val Ala Gln Pro Asp Gln Thr  
 245 250 255

Arg Ile Val Ala Leu Asn Ala His Thr Phe Leu Arg Asn Gly Gly His  
 260 265 270

Phe Val Ile Ser Ile Lys Ala Asn Cys Ile Asp Ser Thr Ala Ser Ala  
 275 280 285

Glu Ala Val Phe Ala Ser Glu Val Lys Lys Met Gln Gln Glu Asn Met  
 290 295 300

Lys Pro Gln Glu Gln Leu Thr Leu Glu Pro Tyr Glu Arg Asp His Ala  
 305 310 315 320

Val Val Val Gly Val Tyr Arg Pro Pro Pro Lys Val Lys Asn  
 325 330

1416

&lt;210&gt; 1364

&lt;211&gt; 602

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (356)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1364

Pro Gly Ala Glu Lys Ser Gly Arg Ala Ala Glu Arg Pro Gly Arg Gly  
 1 5 10 15

Pro Gly Arg Gly Ala His Ser Arg Pro Thr Ala Pro Arg Glu Arg Ala  
 20 25 30

Pro Arg Ser Pro Ala Pro Ser Pro Pro Gly Met Gly Arg Ala Ala Ala  
 35 40 45

Ala Glu Ala Pro Ala Trp Pro Gly Arg Thr Arg Pro Glu Ala Glu Gly  
 50 55 60

Arg Ala Arg Ala Gln Leu Pro Gly His Gln Ile Gly Ala Arg Arg Ala  
 65 70 75 80

Gly Gly Pro Arg Ala Gly Leu Glu Met Ser Trp Pro Arg Arg Leu Leu  
 85 90 95

Leu Arg Tyr Leu Phe Pro Ala Leu Leu Leu His Gly Leu Gly Glu Gly  
 100 105 110

Ser Ala Leu Leu His Pro Asp Ser Arg Ser His Pro Arg Ser Leu Glu  
 115 120 125

Lys Ser Ala Trp Arg Ala Phe Lys Glu Ser Gln Cys His His Met Leu  
 130 135 140

Lys His Leu His Asn Gly Ala Arg Ile Thr Val Gln Met Pro Pro Thr  
 145 150 155 160

Ile Glu Gly His Trp Val Ser Thr Gly Cys Glu Val Arg Ser Gly Pro  
 165 170 175

Glu Phe Ile Thr Arg Ser Tyr Arg Phe Tyr His Asn Asn Thr Phe Lys  
 180 185 190

Ala Tyr Gln Phe Tyr Tyr Gly Ser Asn Arg Cys Thr Asn Pro Thr Tyr

1417

195	200	205
Thr Leu Ile Ile Arg Gly Lys Ile Arg Leu Arg Gln Ala Ser Trp Ile 210 215 220		
Ile Arg Gly Gly Thr Glu Ala Asp Tyr Gln Leu His Asn Val Gln Val 225 230 235 240		
Ile Cys His Thr Glu Ala Val Ala Glu Lys Leu Gly Gln Gln Val Asn 245 250 255		
Arg Thr Cys Pro Gly Phe Leu Ala Asp Gly Gly Pro Trp Val Gln Asp 260 265 270		
Val Ala Tyr Asp Leu Trp Arg Glu Glu Asn Gly Cys Glu Cys Thr Lys 275 280 285		
Ala Val Asn Phe Ala Met His Glu Leu Gln Leu Ile Arg Val Glu Lys 290 295 300		
Gln Tyr Leu His His Asn Leu Asp His Leu Val Glu Glu Leu Phe Leu 305 310 315 320		
Gly Asp Ile His Thr Asp Ala Thr Gln Arg Met Phe Tyr Arg Pro Ser 325 330 335		
Ser Tyr Gln Pro Pro Leu Gln Asn Ala Lys Asn His Asp His Ala Cys 340 345 350		
Ile Ala Cys Xaa Ile Ile Tyr Arg Ser Asp Glu His His Pro Pro Ile 355 360 365		
Leu Pro Pro Lys Ala Asp Leu Thr Ile Gly Leu His Gly Glu Trp Val 370 375 380		
Ser Gln Arg Cys Glu Val Arg Pro Glu Val Leu Phe Leu Thr Arg His 385 390 395 400		
Phe Ile Phe His Asp Asn Asn Asn Thr Trp Glu Gly His Tyr Tyr His 405 410 415		
Tyr Ser Asp Pro Val Cys Lys His Pro Thr Phe Ser Ile Tyr Ala Arg 420 425 430		
Gly Arg Tyr Ser Arg Gly Val Leu Ser Ser Arg Val Met Gly Gly Thr 435 440 445		
Glu Phe Val Phe Lys Val Asn His Met Lys Val Thr Pro Met Asp Ala 450 455 460		
Ala Thr Ala Ser Leu Leu Asn Val Phe Asn Gly Asn Glu Cys Gly Ala		



1418

465		470		475		480
Glu Gly Ser Trp Gln Val Gly Ile Gln Gln Asp Val Thr His Thr Asn						
		485		490		495
Gly Cys Val Ala Leu Gly Ile Lys Leu Pro His Thr Glu Tyr Glu Ile						
		500		505		510
Phe Lys Met Glu Gln Asp Ala Arg Gly Arg Tyr Leu Leu Phe Asn Gly						
		515		520		525
Gln Arg Pro Ser Asp Gly Ser Ser Pro Asp Arg Pro Glu Lys Arg Ala						
		530		535		540
Thr Ser Tyr Gln Met Pro Leu Val Gln Cys Ala Ser Ser Ser Pro Arg						
		545		550		555
				560		
Ala Glu Asp Leu Ala Glu Asp Ser Gly Ser Ser Leu Tyr Gly Arg Ala						
		565		570		575
Pro Gly Arg His Thr Trp Ser Leu Leu Leu Ala Ala Leu Ala Cys Leu						
		580		585		590
Val Pro Leu Leu His Trp Asn Ile Arg Arg						
		595		600		

&lt;210&gt; 1365

&lt;211&gt; 158

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (98)

1419

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (136)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (141)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (142)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1365

Ser	Asn	Ser	Gly	Tyr	Pro	Phe	Trp	Thr	Pro	Ser	Met	Leu	Trp	Lys	Leu
1				5					10					15	

Cys	Thr	Phe	Thr	Leu	Leu	Asn	Lys	Ala	Xaa	Ser	Phe	Phe	Ser	Leu	Ser
			20					25					30		

Val	His	Val	Ser	Phe	Thr	His	Xaa	Gly	Gln	Leu	Pro	His	His	Phe	Phe
	35						40					45			

Gly	Val	Ala	Trp	Gln	Glu	Pro	Gln	Val	Leu	His	Leu	Gly	Glu	Pro	Asp
	50					55					60				

Arg	Arg	Leu	Gln	Lys	Arg	Ile	Lys	Ala	Ile	Lys	Leu	Gln	Xaa	Ile	Leu
65				70			75							80	

Gln	Met	Glu	Pro	Gln	Met	Ser	Ser	Ala	His	Gly	Phe	Tyr	Arg	Gly	Pro
			85					90					95		

Leu	Xaa	Gln	Pro	Ala	Gly	Pro	Ser	Ile	Thr	Leu	Glu	Asn	Ser	Pro	Leu
		100						105					110		

Glu	Asp	Thr	Lys	Leu	Gln	Gly	Pro	Phe	Phe	Thr	Pro	Asn	Gln	Gln	Glu
	115						120					125			

Val	Ala	Arg	Thr	Asp	Cys	His	Xaa	Val	Pro	Asn	Ser	Xaa	Xaa	Gly	Cys
	130					135					140				

Pro	Val	Leu	Glu	Ala	Gly	Phe	Arg	Gly	Gly	Ala	Gln	Leu	Gly
145					150					155			

<210> 1366

1420

<211> 466  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (4)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (12)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (205)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (220)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (347)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1366  
 Ser Thr Arg Xaa Arg Glu Gly Asn Ser His Ser Xaa Gly His Lys Thr  
           1                  5                  10                  15

Ile Gln Gly Ser Leu Gly Arg Leu Ser Ser Ala Val Pro Gly Ser Gly  
                   20                  25                  30

Ala Glu Leu Ser Pro Val Pro Asn Thr Asp Gly Thr Met Asn Ser Gly  
           35                  40                  45

His Ser Phe Ser Gln Thr Pro Ser Ala Ser Phe His Gly Ala Gly Gly  
           50                  55                  60

Gly Trp Gly Arg Pro Arg Ser Phe Pro Arg Ala Pro Thr Val His Gly  
           65                  70                  75                  80

Gly Ala Gly Gly Ala Arg Ile Ser Leu Ser Phe Thr Thr Arg Ser Cys  
                   85                  90                  95

Pro Pro Pro Gly Gly Ser Trp Gly Ser Gly Arg Ser Ser Pro Leu Leu  
           100                  105                  110

1421

Gly Gly Asn Gly Lys Ala Thr Met Gln Asn Leu Asn Asp Arg Leu Ala  
 115 120 125  
 Ser Tyr Leu Glu Lys Val Arg Ala Leu Glu Glu Ala Asn Met Lys Leu  
 130 135 140  
 Glu Ser Arg Ile Leu Lys Trp His Gln Gln Arg Asp Pro Gly Ser Lys  
 145 150 155 160  
 Lys Asp Tyr Ser Gln Tyr Glu Glu Asn Ile Thr His Leu Gln Glu Gln  
 165 170 175  
 Ile Val Asp Gly Lys Met Thr Asn Ala Gln Ile Ile Leu Leu Ile Asp  
 180 185 190  
 Asn Ala Arg Met Ala Val Asp Asp Phe Asn Leu Lys Xaa Glu Asn Glu  
 195 200 205  
 His Ser Phe Lys Lys Asp Leu Glu Ile Glu Val Xaa Gly Leu Arg Arg  
 210 215 220  
 Thr Leu Asp Asn Leu Thr Ile Val Thr Thr Asp Leu Glu Gln Glu Val  
 225 230 235 240  
 Glu Gly Met Arg Lys Glu Leu Ile Leu Met Lys Lys His His Glu Gln  
 245 250 255  
 Glu Met Glu Lys His His Val Pro Ser Asp Phe Asn Val Asn Val Lys  
 260 265 270  
 Val Asp Thr Gly Pro Arg Glu Asp Leu Ile Lys Val Leu Glu Asp Met  
 275 280 285  
 Arg Gln Glu Tyr Glu Leu Ile Ile Lys Lys Lys His Arg Asp Leu Asp  
 290 295 300  
 Thr Trp Tyr Lys Glu Gln Ser Ala Ala Met Ser Gln Glu Ala Ala Ser  
 305 310 315 320  
 Pro Ala Thr Val Gln Ser Arg Gln Gly Asp Ile His Glu Leu Lys Arg  
 325 330 335  
 Thr Phe Gln Ala Leu Glu Ile Asp Leu Gln Xaa Gln Tyr Ser Thr Lys  
 340 345 350  
 Ser Ala Leu Glu Asn Met Leu Ser Glu Thr Gln Ser Arg Tyr Ser Cys  
 355 360 365  
 Lys Leu Gln Asp Met Gln Glu Ile Ile Ser His Tyr Glu Glu Glu Leu  
 370 375 380

1422

Thr Gln Leu Arg His Glu Leu Glu Arg Gln Asn Asn Glu Tyr Gln Val  
385 390 395 400

Leu Leu Gly Ile Lys Thr His Leu Glu Lys Glu Ile Thr Thr Tyr Arg  
405 410 415

Arg Leu Leu Glu Gly Glu Ser Glu Gly Thr Arg Glu Glu Ser Lys Ser  
420 425 430

Ser Met Lys Val Ser Ala Thr Pro Lys Ile Lys Ala Ile Thr Gln Glu  
435 440 445

Thr Ile Asn Gly Arg Leu Val Leu Cys Gln Val Asn Glu Ile Gln Lys  
450 455 460

His Ala  
465

&lt;210&gt; 1367

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (136)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (138)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (141)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (142)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (143)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1423

&lt;221&gt; SITE

&lt;222&gt; (152)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1367

Leu Arg Phe Ala Ser Pro Gly Pro Gly Ala Gly Arg Ala Arg Asp Ser  
 1 5 10 15

Gln Arg Lys Trp Arg Arg Leu Arg Ala Arg Pro Leu Leu Gly Pro Gly  
 20 25 30

Gln Gly Trp Ser Trp Ala Gly Ile Pro Ser Ser Ala Ala Ala Gln Arg  
 35 40 45

Ala Gly Pro Pro Ala Gly Ala Leu Glu Ala Leu Ser Pro Gly Gly Ala  
 50 55 60

Arg Ala His Ala Glu Arg Arg Gly Glu Met Arg Ala Thr Pro Leu Ala  
 65 70 75 80

Ala Pro Ala Gly Ser Leu Ser Arg Lys Lys Arg Leu Glu Leu Asp Asp  
 85 90 95

Asn Leu Asp Thr Glu Arg Pro Val Gln Lys Arg Ala Arg Ser Gly Pro  
 100 105 110

Gln Pro Arg Leu Pro Pro Cys Leu Leu Pro Leu Ser Pro Pro Thr Ala  
 115 120 125

Pro Asp Arg Ala Thr Ala Val Xaa Thr Xaa Ser Arg Xaa Xaa Xaa Tyr  
 130 135 140

Val Leu Leu Glu Ala Arg Arg Xaa Ala  
 145 150

&lt;210&gt; 1368

&lt;211&gt; 399

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

1424

&lt;400&gt; 1368

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Ser Asp Asn Xaa Thr Asn Gly Cys Gly Leu Glu Ser Xaa Gly Asn Thr
 1              5              10              15

Val Thr Pro Val Asn Val Asn Glu Val Lys Pro Ile Asn Lys Gly Glu
      20              25              30

Glu Gln Ile Gly Phe Glu Leu Val Glu Lys Leu Phe Gln Gly Gln Leu
      35              40              45

Val Leu Arg Thr Arg Cys Leu Glu Cys Glu Ser Leu Thr Glu Arg Arg
      50              55              60

Glu Asp Phe Gln Asp Ile Ser Val Pro Val Gln Glu Asp Glu Leu Ser
      65              70              75              80

Lys Val Glu Glu Ser Ser Glu Ile Ser Pro Glu Pro Lys Thr Glu Met
      85              90              95

Lys Thr Leu Arg Trp Ala Ile Ser Gln Phe Ala Ser Val Glu Arg Ile
      100             105             110

Val Gly Glu Asp Lys Tyr Phe Cys Glu Asn Cys His His Tyr Thr Glu
      115             120             125

Ala Glu Arg Ser Leu Leu Phe Asp Lys Met Pro Glu Val Ile Thr Ile
      130             135             140

His Leu Lys Cys Phe Ala Ala Ser Gly Leu Glu Phe Asp Cys Tyr Gly
      145             150             155             160

Gly Gly Leu Ser Lys Ile Asn Thr Pro Leu Leu Thr Pro Leu Lys Leu
      165             170             175

Ser Leu Glu Glu Trp Ser Thr Lys Pro Thr Asn Asp Ser Tyr Gly Leu
      180             185             190

Phe Ala Val Val Met His Ser Gly Ile Thr Ile Ser Ser Gly His Tyr
      195             200             205

Thr Ala Ser Val Lys Val Thr Asp Leu Asn Ser Leu Glu Leu Asp Lys
      210             215             220

Gly Asn Phe Val Val Asp Gln Met Cys Glu Ile Gly Lys Pro Glu Pro
      225             230             235             240

Leu Asn Glu Glu Glu Ala Arg Gly Val Val Glu Asn Tyr Asn Asp Glu
      245             250             255

Glu Val Ser Ile Arg Val Gly Gly Asn Thr Gln Pro Ser Lys Val Leu

```

1425

260	265	270
Asn Lys Lys Asn Val Glu Ala Ile Gly Leu Leu Gly Gly Gln Lys Ser		
275	280	285
Lys Ala Asp Tyr Glu Leu Tyr Asn Lys Ala Ser Asn Pro Asp Lys Val		
290	295	300
Ala Ser Thr Ala Phe Ala Glu Asn Arg Asn Ser Glu Thr Ser Asp Thr		
305	310	315
Thr Gly Thr His Glu Ser Asp Arg Asn Lys Glu Ser Ser Asp Gln Thr		
325	330	335
Gly Ile Asn Ile Ser Gly Phe Glu Asn Lys Ile Ser Tyr Val Val Gln		
340	345	350
Ser Leu Lys Glu Tyr Glu Gly Lys Trp Leu Leu Phe Asp Asp Ser Glu		
355	360	365
Val Lys Val Thr Glu Glu Lys Asp Phe Leu Asn Ser Leu Ser Pro Ser		
370	375	380
Thr Ser Pro Thr Ser Thr Pro Tyr Leu Leu Phe Tyr Lys Lys Leu		
385	390	395

&lt;210&gt; 1369

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1369

Val Phe Xaa Ser Phe Phe Ala Glu Lys Glu Gln Gln Glu Ala Ile Glu		
1	5	10
His Ile Asp Glu Val Gln Asn Glu Ile Asp Arg Leu Asn Glu Gln Ala		
20	25	30
Ser Glu Glu Ile Leu Lys Val Glu Gln Lys Tyr Asn Lys Leu Arg Gln		
35	40	45
Pro Phe Phe Gln Lys Arg Ser Glu Leu Ile Ala Lys Ile Pro Asn Phe		
50	55	60



1426

Trp Val Thr Thr Phe Val Asn His Pro Gln Val Ser Ala Leu Leu Gly  
 65 70 75 80  
 Glu Glu Asp Glu Glu Ala Leu His Tyr Leu Thr Arg Val Glu Val Thr  
 85 90 95  
 Glu Phe Glu Asp Ile Lys Ser Gly Tyr Arg Ile Asp Phe Tyr Phe Asp  
 100 105 110  
 Glu Asn Pro Tyr Phe Glu Asn Lys Val Leu Ser Lys Glu Phe His Leu  
 115 120 125  
 Asn Glu Ser Gly Asp Pro Ser Ser Lys Ser Thr Glu Ile Lys Trp Lys  
 130 135 140  
 Ser Gly Lys Asp Leu Thr Lys Arg Ser Ser Gln Thr Gln Asn Lys Ala  
 145 150 155 160  
 Ser Arg Lys Arg Gln His Glu Glu Pro Glu Ser Phe Phe Thr Trp Phe  
 165 170 175  
 Thr Asp His Ser Asp Ala Gly Ala Asp Glu Leu Gly Glu Val Ile Lys  
 180 185 190  
 Asp Asp Ile Trp Pro Asn Pro Leu Gln Tyr Tyr Leu Val Pro Asp Met  
 195 200 205  
 Asp Asp Glu Glu Gly Glu Gly Glu Glu Asp Asp Asp Asp Glu Glu  
 210 215 220  
 Glu Glu Gly Leu Glu Asp Ile Asp Glu Glu Gly Asp Glu Asp Glu Gly  
 225 230 235 240  
 Glu Glu Asp Glu Asp Asp Asp Glu Gly Glu Glu Gly Glu Glu Asp Glu  
 245 250 255  
 Gly Glu Asp Asp  
 260

&lt;210&gt; 1370

&lt;211&gt; 155

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1370

Lys Gly Glu Ala Ala Ala Phe Ser Ala Thr Phe Pro Ile Ala Arg Gln  
 1 5 10 15

Glu Phe Leu Ser Val Thr Thr Ile Ala Val Met Ser Gly Arg Gly Lys

1427

	20		25		30
Gln Gly Gly Lys Ala Arg Ala Lys Ala Lys Ser Arg Ser Ser Arg Ala	35	40	45		
Gly Leu Gln Phe Pro Val Gly Glu Cys Ile Ala Leu Arg Lys Gly Asn	50	55	60		
Tyr Ala Glu Arg Val Gly Ala Gly Ala Pro Val Tyr Met Ala Ala Val	65	70	75	80	
Leu Glu Tyr Leu Thr Ala Glu Ile Leu Glu Leu Ala Gly Asn Ala Ala	85	90	95		
Arg Asp Asn Lys Lys Thr Arg Ile Ile Pro Arg His Leu Gln Leu Ala	100	105	110		
Ile Arg Asn Asp Glu Glu Leu Asn Lys Leu Leu Gly Lys Val Thr Ile	115	120	125		
Ala Gln Gly Gly Val Leu Pro Asn Ile Gln Ala Val Leu Leu Pro Lys	130	135	140		
Lys Thr Glu Ser His His Lys Ala Lys Gly Lys	145	150	155		

&lt;210&gt; 1371

&lt;211&gt; 140

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1371

Phe Pro Gly Arg Thr His Ala Leu Cys Arg Gly Ala Ala Ser Arg Gly	1	5	10	15
Leu Leu Cys Lys Trp Ala Pro Trp Pro Ser Ala Pro Val Pro Ala Thr	20	25	30	
Arg Asp Arg Ala Pro Arg Pro Ala Arg Gly Arg Arg Pro Asp Pro Thr	35	40	45	
Ser Gln Gln Ala Lys Ala Trp Arg Pro Ser Pro Pro Ala Ala Arg Ser	50	55	60	
Trp Pro Pro Thr Thr Thr Thr Gly Ala Ala Trp Val Pro Leu Pro Ala	65	70	75	80
Thr Ala Pro Ala Ala Val Pro Ser Ala Pro Gly Lys Pro Phe Pro Thr	85	90	95	

1428

Pro Gln Val Ser Pro Arg Leu Thr Arg Val Ile Gly Gly Pro Ala Ser  
                   100                  105                  110

Phe Ser Gly Ser Pro Pro Ser Arg Ser Trp Pro Arg Cys Trp Ser Pro  
           115                  120                  125

Gln Ser Thr Arg Asn Leu Pro Arg Pro Pro Ala Ala  
       130                  135                  140

&lt;210&gt; 1372

&lt;211&gt; 150

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (126)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (127)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (128)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (135)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (142)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (147)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1372

Pro Trp Thr Leu Gly Gly Pro Glu Leu Asp Ala Met Gly Gly Cys Ala  
   1                  5                  10                  15

1429

Gly Ser Arg Arg Arg Phe Ser Asp Ser Glu Gly Glu Glu Thr Val Pro  
                     20                    25                    30  
 Glu Pro Arg Leu Pro Leu Leu Asp His Gln Gly Ala His Trp Lys Asn  
                     35                    40                    45  
 Ala Val Gly Phe Trp Leu Leu Gly Leu Cys Asn Asn Phe Ser Tyr Val  
                     50                    55                    60  
 Val Met Leu Ser Ala Ala His Asp Ile Leu Ser His Lys Arg Thr Ser  
                     65                    70                    75                    80  
 Gly Asn Gln Ser His Val Asp Pro Gly Pro Thr Pro Ile Pro His Asn  
                     85                    90                    95  
 Ser Ser Ser Arg Phe Asp Cys Asn Ser Val Ser Thr Ala Ala Val Leu  
                     100                    105                    110  
 Leu Ala Asp Ile Leu Pro Thr Leu Val Ile Lys Leu Leu Xaa Xaa Xaa  
                     115                    120                    125  
 Gly Leu His Leu Leu Pro Xaa Thr Val Glu Asp Ala Val Xaa Leu Cys  
                     130                    135                    140  
 Ala Leu Xaa Gly Thr Ala  
                     145                    150

&lt;210&gt; 1373

&lt;211&gt; 128

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (121)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1373

Arg His Ser Arg Val Asp Pro Arg Val Arg Ala Arg Phe Arg Arg Arg  
                     1                    5                    10                    15

Arg Ala Phe Ala Xaa Leu Gly Trp Ser Ser Gly Arg Val Ser Arg Pro  
                     20                    25                    30

1430

Glu His Val Asp Ala His Pro Pro Leu Ser Leu Met Glu Val Val Thr  
           35                          40                          45  
 Phe Gly Asp Val Ala Val His Phe Ser Arg Glu Glu Trp Gln Cys Leu  
           50                          55                          60  
 Asp Pro Gly Gln Arg Ala Leu Tyr Arg Glu Val Met Leu Glu Asn His  
           65                          70                          75                          80  
 Ser Ser Val Ala Gly Leu Ala Gly Phe Leu Val Phe Lys Pro Glu Leu  
                           85                          90                          95  
 Ile Ser Arg Leu Glu Gln Gly Glu Glu Pro Trp Val Leu Asp Leu Gln  
                           100                          105                          110  
 Gly Ala Glu Gly Thr Glu Ala Pro Xaa Thr Ser Lys Thr Gly Glu Ala  
           115                          120                          125

&lt;210&gt; 1374

&lt;211&gt; 398

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1374

Ser Ser Trp Leu Arg Ser Arg Ser Gly Met Gln Thr Asp Leu Gln Asn  
   1                          5                          10                          15  
 Leu Gly Asn Asp Ser Gly Asp His Ser Asp His Met His Tyr Tyr Gln  
           20                          25                          30  
 Gly Lys Lys Tyr Phe Arg Asp Arg Arg Gly Gly Gly Arg Asn Ser Asp  
           35                          40                          45  
 Trp Ser Ser Asp Thr Asn Arg Gln Gly Gln Gln Ser Ser Ser Asp Cys  
           50                          55                          60  
 Tyr Ile Tyr Asp Ser Ala Thr Gly Tyr Tyr Tyr Asp Pro Leu Ala Gly  
           65                          70                          75                          80  
 Thr Tyr Tyr Asp Pro Asn Thr Gln Gln Glu Val Tyr Val Pro Gln Asp  
                           85                          90                          95  
 Pro Gly Leu Pro Glu Glu Glu Glu Ile Lys Glu Lys Lys Pro Thr Ser  
           100                          105                          110  
 Gln Gly Lys Ser Ser Ser Lys Lys Glu Met Ser Lys Arg Asp Gly Lys

1431

115	120	125
Glu Lys Lys Asp Arg Gly Val Thr Arg Phe Gln Glu Asn Ala Ser Glu		
130	135	140
Gly Lys Ala Pro Ala Glu Asp Val Phe Lys Lys Pro Leu Pro Pro Thr		
145	150	155
Val Lys Lys Glu Glu Ser Pro Pro Pro Pro Lys Val Val Asn Pro Leu		
	165	170
Ile Gly Leu Leu Gly Glu Tyr Gly Gly Asp Ser Asp Tyr Glu Glu Glu		
	180	185
Glu Glu Glu Glu Gln Thr Pro Pro Pro Gln Pro Arg Thr Ala Gln Pro		
	195	200
Gln Lys Arg Glu Glu Gln Thr Lys Lys Glu Asn Glu Glu Asp Lys Leu		
	210	215
Thr Asp Trp Asn Lys Leu Ala Cys Leu Leu Cys Arg Arg Gln Phe Pro		
	225	230
Asn Lys Glu Val Leu Ile Lys His Gln Gln Leu Ser Asp Leu His Lys		
	245	250
Gln Asn Leu Glu Ile His Arg Lys Ile Lys Gln Ser Glu Gln Glu Leu		
	260	265
Ala Tyr Leu Glu Arg Arg Glu Arg Glu Gly Lys Phe Lys Gly Arg Gly		
	275	280
Asn Asp Arg Arg Glu Lys Leu Gln Ser Phe Asp Ser Pro Glu Arg Lys		
	290	295
Arg Ile Lys Tyr Ser Arg Glu Thr Asp Ser Asp Arg Lys Leu Val Asp		
	305	310
Lys Glu Asp Ile Asp Thr Ser Ser Lys Gly Gly Cys Val Gln Gln Ala		
	325	330
Thr Gly Trp Arg Lys Gly Thr Gly Leu Gly Tyr Gly His Pro Gly Leu		
	340	345
Ala Ser Ser Glu Glu Ala Glu Gly Arg Met Arg Gly Pro Ser Val Gly		
	355	360
Ala Ser Gly Arg Thr Ser Lys Arg Gln Ser Asn Glu Thr Tyr Arg Asp		
	370	375
Ala Val Arg Arg Val Met Phe Ala Arg Tyr Lys Glu Leu Asp		

1432

385

390

395

&lt;210&gt; 1375

&lt;211&gt; 167

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (157)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (161)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (163)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1375

His	Arg	Gly	Lys	Arg	Tyr	Thr	Asp	Ser	Thr	Val	Arg	Asn	Ser	Arg	Val
1				5						10				15	

Asp	Pro	Arg	Val	Arg	Ser	Ala	Lys	Pro	Glu	Ser	Cys	Pro	Phe	Ser	Leu
			20						25					30	

Pro	Gly	Gln	His	Glu	Leu	His	His	Ser	Leu	His	Leu	Leu	His	Gln	Leu
		35					40					45			

Pro	Val	Pro	Gly	Leu	Cys	Pro	Gly	Ala	Gln	Leu	Arg	Arg	Pro	Ala	Gly
		50				55						60			

Gln	Gln	Arg	Gly	Gln	Arg	Leu	Cys	Arg	Arg	Trp	Gly	Leu	Trp	Phe	Pro
65					70					75					80

Asp	Leu	Arg	Val	Pro	Leu	His	Gln	Leu	Gln	Gly	Arg	His	Gly	Val	Arg
			85							90				95	

Gly	Pro	Gly	His	Arg	Asp	Ser	Arg	Gly	Ser	Gly	Arg	Asn	Gly	Ser	Ile
			100					105					110		

Gln	Asn	Glu	Lys	Glu	Thr	Met	Gln	Lys	Leu	Asn	Asp	Arg	Leu	Ala	Ser
		115						120					125		

Tyr	Leu	Asp	Lys	Met	Lys	Glu	Pro	Gly	Asp	Arg	Glu	Thr	Gly	Gly	Trp
			130				135					140			

1433

Lys Ala Lys Thr Arg Glu His Phe Gly Glu Glu Gly Xaa Gln Val Arg  
 145 150 155 160

Xaa Trp Xaa Pro Leu Ile Gln  
 165

&lt;210&gt; 1376

&lt;211&gt; 448

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1376

Leu Pro Asp Val Glu Lys Leu Gly Arg Arg Arg Gly Arg Lys Met Asp  
 1 5 10 15

Ser Val Glu Lys Gly Ala Ala Thr Ser Val Ser Asn Pro Arg Gly Arg  
 20 25 30

Pro Ser Arg Gly Arg Pro Pro Lys Leu Gln Arg Asn Ser Arg Gly Gly  
 35 40 45

Gln Gly Arg Gly Val Glu Lys Pro Pro His Leu Ala Ala Leu Ile Leu  
 50 55 60

Ala Arg Gly Gly Ser Lys Gly Ile Pro Leu Lys Asn Ile Lys His Leu  
 65 70 75 80

Ala Gly Val Pro Leu Ile Gly Trp Val Leu Arg Ala Ala Leu Asp Ser  
 85 90 95

Gly Ala Phe Gln Ser Val Trp Val Ser Thr Asp His Asp Glu Ile Glu  
 100 105 110

Asn Val Ala Lys Gln Phe Gly Ala Gln Val His Arg Arg Ser Ser Glu  
 115 120 125

Val Ser Lys Asp Ser Ser Thr Ser Leu Asp Ala Ile Ile Glu Phe Leu  
 130 135 140

Asn Tyr His Asn Glu Val Asp Ile Val Gly Asn Ile Gln Ala Thr Ser  
 145 150 155 160

Pro Cys Leu His Pro Thr Asp Leu Gln Lys Val Ala Glu Met Ile Arg  
 165 170 175

Glu Glu Gly Tyr Asp Ser Val Phe Ser Val Val Arg Arg His Gln Phe  
 180 185 190



1434

Arg Trp Ser Glu Ile Gln Lys Gly Val Arg Glu Val Thr Glu Pro Leu  
 195 200 205

Asn Leu Asn Pro Ala Lys Arg Pro Arg Arg Gln Asp Trp Asp Gly Glu  
 210 215 220

Leu Tyr Glu Asn Gly Ser Phe Tyr Phe Ala Lys Arg His Leu Ile Glu  
 225 230 235 240

Met Gly Tyr Leu Gln Gly Gly Lys Met Ala Tyr Tyr Glu Met Arg Ala  
 245 250 255

Glu His Ser Val Asp Ile Asp Val Asp Ile Asp Trp Pro Ile Ala Glu  
 260 265 270

Gln Arg Val Leu Arg Tyr Gly Tyr Phe Gly Lys Glu Lys Leu Lys Glu  
 275 280 285

Ile Lys Leu Leu Val Cys Asn Ile Asp Gly Cys Leu Thr Asn Gly His  
 290 295 300

Ile Tyr Val Ser Gly Asp Gln Lys Glu Ile Ile Ser Tyr Asp Val Lys  
 305 310 315 320

Asp Ala Ile Gly Ile Ser Leu Leu Lys Lys Ser Gly Ile Glu Val Arg  
 325 330 335

Leu Ile Ser Glu Arg Ala Cys Ser Lys Gln Thr Leu Ser Ser Leu Lys  
 340 345 350

Leu Asp Cys Lys Met Glu Val Ser Val Ser Asp Lys Leu Ala Val Val  
 355 360 365

Asp Glu Trp Arg Lys Glu Met Gly Leu Cys Trp Lys Glu Val Ala Tyr  
 370 375 380

Leu Gly Asn Glu Val Ser Asp Glu Glu Cys Leu Lys Arg Val Gly Leu  
 385 390 395 400

Ser Gly Ala Pro Ala Asp Ala Cys Ser Thr Ala Gln Lys Ala Val Gly  
 405 410 415

Tyr Ile Cys Lys Cys Asn Gly Gly Arg Gly Ala Ile Arg Glu Phe Ala  
 420 425 430

Glu His Ile Cys Leu Leu Met Glu Lys Val Asn Asn Ser Cys Gln Lys  
 435 440 445

1435

&lt;210&gt; 1377

&lt;211&gt; 469

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1377

Gly Gly Pro Ala Lys Met Ala Ala Ser Cys Leu Val Leu Leu Ala Leu  
 1 5 10 15

Cys Leu Leu Leu Pro Leu Leu Leu Leu Gly Gly Trp Lys Arg Trp Arg  
 20 25 30

Arg Gly Arg Ala Ala Arg His Val Val Ala Val Val Leu Gly Asp Val  
 35 40 45

Gly Arg Ser Pro Arg Met Gln Tyr His Ala Leu Ser Leu Ala Met His  
 50 55 60

Gly Phe Ser Val Thr Leu Leu Gly Phe Cys Asn Ser Lys Pro His Asp  
 65 70 75 80

Glu Leu Leu Gln Asn Asn Arg Ile Gln Ile Val Gly Leu Thr Glu Leu  
 85 90 95

Gln Ser Leu Ala Val Gly Pro Arg Val Phe Gln Tyr Gly Val Lys Val  
 100 105 110

Val Leu Gln Ala Met Tyr Leu Leu Trp Lys Leu Met Trp Arg Glu Pro  
 115 120 125

Gly Ala Tyr Ile Phe Leu Gln Asn Pro Pro Gly Leu Pro Ser Ile Ala  
 130 135 140

Val Cys Trp Phe Val Gly Cys Leu Cys Gly Ser Lys Leu Val Ile Asp  
 145 150 155 160

Trp His Asn Tyr Gly Tyr Ser Ile Met Gly Leu Val His Gly Pro Asn  
 165 170 175

His Pro Leu Val Leu Leu Ala Lys Trp Tyr Glu Lys Phe Phe Gly Arg  
 180 185 190

Leu Ser His Leu Asn Leu Cys Val Thr Asn Ala Met Arg Glu Asp Leu  
 195 200 205

Ala Asp Asn Trp His Ile Arg Ala Val Thr Val Tyr Asp Lys Pro Ala  
 210 215 220

Ser Phe Phe Lys Glu Thr Pro Leu Asp Leu Gln His Arg Leu Phe Met

1436

[illegible]

<210> 1378

<211> 314

1437

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (93)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1378

Glu Lys Ala Ala Gly Ala Gly Lys Ser His Leu Ala Ile Val Gln Lys  
 1 5 10 15

Val Asn Asn Glu Gly Glu Gly Asp Pro Phe Tyr Glu Val Leu Gly Leu  
 20 25 30

Val Thr Leu Glu Asp Val Ile Glu Glu Ile Ile Lys Ser Glu Ile Leu  
 35 40 45

Asp Glu Ser Asp Met Tyr Thr Asp Asn Arg Ser Arg Lys Arg Val Ser  
 50 55 60

Glu Lys Asn Lys Arg Asp Phe Ser Ala Phe Lys Asp Ala Asp Asn Glu  
 65 70 75 80

Leu Lys Val Lys Ile Ser Pro Gln Leu Leu Leu Ala Xaa His Arg Phe  
 85 90 95

Leu Ala Thr Glu Val Ser Gln Phe Ser Pro Ser Leu Ile Ser Glu Lys  
 100 105 110

Ile Leu Leu Arg Leu Leu Lys Tyr Pro Asp Val Ile Gln Glu Leu Lys  
 115 120 125

Phe Asp Glu His Asn Lys Tyr Tyr Ala Arg His Tyr Leu Tyr Thr Arg  
 130 135 140

Asn Lys Pro Ala Asp Tyr Phe Ile Leu Ile Leu Gln Gly Lys Val Glu  
 145 150 155 160

Val Glu Ala Gly Lys Glu Asn Met Lys Phe Glu Thr Gly Ala Phe Ser  
 165 170 175

Tyr Tyr Gly Thr Met Ala Leu Thr Ser Val Pro Ser Asp Arg Ser Pro  
 180 185 190

Ala His Pro Thr Pro Leu Ser Arg Ser Ala Ser Leu Ser Tyr Pro Asp  
 195 200 205

Arg Thr Asp Val Ser Thr Ala Ala Thr Leu Ala Gly Ser Ser Asn Gln  
 210 215 220

1438

Phe Gly Ser Ser Val Leu Gly Gln Tyr Ile Ser Asp Phe Ser Val Arg  
 225 230 235 240  
 Ala Leu Val Asp Leu Gln Tyr Ile Lys Ile Thr Arg Gln Gln Tyr Gln  
 245 250 255  
 Asn Gly Leu Leu Ala Ser Arg Met Glu Asn Ser Pro Gln Phe Pro Ile  
 260 265 270  
 Asp Gly Cys Thr Thr His Met Glu Asn Leu Ala Glu Lys Ser Glu Leu  
 275 280 285  
 Pro Val Val Asp Glu Thr Thr Thr Leu Leu Asn Glu Arg Asn Ser Leu  
 290 295 300  
 Leu His Lys Ala Ser His Glu Asn Ala Ile  
 305 310

&lt;210&gt; 1379

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1379

Ser Cys Pro Val Leu Lys Met Phe Pro Glu Gln Gln Lys Glu Glu Phe  
 1 5 10 15  
 Val Ser Val Trp Val Arg Asp Pro Arg Ile Gln Lys Glu Asp Phe Trp  
 20 25 30  
 His Ser Tyr Ile Asp Tyr Glu Ile Cys Ile His Thr Asn Ser Met Cys  
 35 40 45  
 Phe Thr Met Lys Thr Ser Cys Val Arg Arg Arg Tyr Arg Glu Phe Val  
 50 55 60  
 Trp Leu Arg Gln Arg Leu Gln Ser Asn Ala Leu Leu Val Gln Leu Pro  
 65 70 75 80  
 Glu Leu Pro Ser Lys Asn Leu Phe Phe Asn Met Asn Asn Arg Gln His  
 85 90 95  
 Val Asp Gln Arg Arg Gln Gly Leu Gly Asn Phe Leu Arg Lys Val Leu  
 100 105 110  
 Gln Met His Phe Cys Phe Gln Ile Ala Ala Phe Thr Ser Ser Leu Gln  
 115 120 125  
 Ser His Leu

1439

130

&lt;210&gt; 1380

&lt;211&gt; 219

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1380

Pro Gly Ala Ala Trp Ser Arg Pro Asp Leu Arg Gly Cys Cys Thr Gly  
 1 5 10 15

Pro Gln Pro Ala Leu Arg Met Leu Val Leu Pro Ser Pro Cys Pro Gln  
 20 25 30

Pro Leu Ala Phe Ser Ser Val Glu Thr Met Glu Gly Pro Pro Arg Arg  
 35 40 45

Thr Cys Arg Ser Pro Glu Pro Gly Pro Ser Ser Ser Ile Gly Ser Pro  
 50 55 60

Gln Ala Ser Ser Pro Pro Arg Pro Asn His Tyr Leu Leu Ile Asp Thr  
 65 70 75 80

Gln Gly Val Pro Tyr Thr Val Leu Val Asp Glu Glu Ser Gln Arg Glu  
 85 90 95

Pro Gly Ala Ser Gly Ala Pro Gly Gln Lys Lys Cys Tyr Ser Cys Pro  
 100 105 110

Val Cys Ser Arg Val Phe Glu Tyr Met Ser Tyr Leu Gln Arg His Ser  
 115 120 125

Ile Thr His Ser Glu Val Lys Pro Phe Glu Cys Asp Ile Cys Gly Lys  
 130 135 140

Ala Phe Lys Arg Ala Ser His Leu Ala Arg His His Ser Ile His Leu  
 145 150 155 160

Ala Gly Gly Gly Arg Pro His Gly Cys Pro Leu Cys Pro Arg Arg Phe  
 165 170 175

Arg Asp Ala Gly Glu Leu Ala Gln His Ser Arg Val His Ser Gly Glu  
 180 185 190

Arg Pro Phe Gln Cys Pro His Cys Pro Arg Arg Phe Met Glu Gln Asn  
 195 200 205

Thr Leu Gln Lys His Thr Arg Trp Lys His Pro  
 210 215

1440

<210> 1381

<211> 275

<212> PRT

<213> Homo sapiens

<400> 1381

Gly Val Ala Leu Phe Lys Ser Ala Ala Gly Asp Gln Pro Thr Ala Ala  
1 5 10 15

Cys Ile Cys Ile Gln Arg Gln Val Pro Pro Val Pro Ala Ala Arg Ala  
20 25 30

Pro Gln Ser Arg Thr Arg Ser Ala Gln Ala Lys Leu Ala Leu Thr Met  
35 40 45

Pro Val Lys Gly Gly Thr Lys Cys Ile Lys Tyr Leu Leu Phe Gly Phe  
50 55 60

Asn Phe Ile Phe Trp Leu Ala Gly Ile Ala Val Leu Ala Ile Gly Leu  
65 70 75 80

Trp Leu Arg Phe Asp Ser Gln Thr Lys Ser Ile Phe Glu Gln Glu Thr  
85 90 95

Asn Asn Asn Asn Ser Ser Phe Tyr Thr Gly Val Tyr Ile Leu Ile Gly  
100 105 110

Ala Gly Ala Leu Met Met Leu Val Gly Phe Leu Gly Cys Cys Gly Ala  
115 120 125

Val	Gln	Glu	Ser	Gln	Cys	Met	Leu	Gly	Leu	Phe	Phe	Gly	Phe	Leu	Leu
130						135					140				

Val Ile Phe Ala Ile Glu Ile Ala Ala Ala Ile Trp Gly Tyr Ser His  
145 150 155 160

Lys Asp Glu Val Ile Lys Glu Val Gln Glu Phe Tyr Lys Asp Thr Tyr  
165 170 175

Asn Lys Leu Lys Thr Lys Asp Glu Pro Gln Arg Glu Thr Leu Lys Ala  
180 185 190

Ile His Tyr Ala Leu Asn Cys Cys Gly Leu Ala Gly Gly Val Glu Gln  
195 200 205

Phe Ile Ser Asp Ile Cys Pro Lys Lys Asp Val Leu Glu Thr Phe Thr  
210 215 220

1441

Val Lys Ser Cys Pro Asp Ala Ile Lys Glu Val Phe Asp Asn Lys Phe  
 225 230 235 240

His Ile Ile Gly Ala Val Gly Ile Gly Ile Ala Val Val Met Ile Phe  
 245 250 255

Gly Met Ile Phe Ser Met Ile Leu Cys Cys Ala Ile Arg Arg Asn Arg  
 260 265 270

Glu Met Val  
 275

&lt;210&gt; 1382

&lt;211&gt; 766

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1382

Pro Cys Trp Glu Leu Val Gly Pro Pro Gly Trp Gln Xaa Ile Arg Ala  
 1 5 10 15

Xaa Pro Ala Thr Val His Arg Ala Glu Ile Leu Ser Phe Pro Arg Ser  
 20 25 30

Lys Thr Ser Glu Pro Ala Lys Arg Gly Arg Thr Ala Ser Ala Ala Met  
 35 40 45

Ala Leu Lys Asp Tyr Ala Leu Glu Lys Glu Lys Val Lys Lys Phe Leu  
 50 55 60

Gln Glu Phe Tyr Gln Asp Asp Glu Leu Gly Lys Lys Gln Phe Lys Tyr  
 65 70 75 80

Gly Asn Gln Leu Val Arg Leu Ala His Arg Glu Gln Val Ala Leu Tyr



85										90					95				
Val	Asp	Leu	Asp	Asp	Val	Ala	Glu	Asp	Asp	Pro	Glu	Leu	Val	Asp	Ser				
100								105				110							
Ile	Cys	Glu	Asn	Ala	Arg	Arg	Tyr	Ala	Lys	Xaa	Phe	Ala	Asp	Ala	Val				
115								120				125							
Gln	Glu	Leu	Leu	Pro	Gln	Tyr	Lys	Glu	Arg	Glu	Val	Val	Asn	Lys	Asp				
130								135				140							
Val	Leu	Asp	Val	Tyr	Ile	Glu	His	Arg	Leu	Met	Met	Glu	Gln	Arg	Ser				
145												155							
Arg	Asp	Pro	Gly	Met	Val	Arg	Ser	Pro	Gln	Asn	Gln	Tyr	Pro	Ala	Glu				
				165								170							
Leu	Met	Arg	Arg	Phe	Glu	Leu	Tyr	Phe	Gln	Gly	Pro	Ser	Ser	Asn	Lys				
				180								185							
Pro	Arg	Val	Ile	Arg	Glu	Val	Arg	Ala	Asp	Ser	Val	Gly	Lys	Leu	Val				
195								200				205							
Thr	Val	Arg	Gly	Ile	Val	Thr	Arg	Val	Ser	Glu	Val	Lys	Pro	Lys	Met				
210								215				220							
Val	Val	Ala	Thr	Tyr	Thr	Cys	Asp	Gln	Cys	Gly	Ala	Glu	Thr	Tyr	Gln				
225								230				235							
Pro	Ile	Gln	Ser	Pro	Thr	Phe	Met	Pro	Leu	Ile	Met	Cys	Pro	Ser	Gln				
				245								250							
Glu	Cys	Gln	Thr	Asn	Arg	Ser	Gly	Gly	Arg	Leu	Tyr	Leu	Gln	Thr	Arg				
				260								265							
Gly	Ser	Arg	Phe	Ile	Lys	Phe	Gln	Glu	Met	Lys	Met	Gln	Glu	His	Ser				
275								280				285							
Asp	Gln	Val	Pro	Val	Gly	Asn	Ile	Pro	Arg	Ser	Ile	Thr	Val	Leu	Val				
290								295				300							
Glu	Gly	Glu	Asn	Thr	Arg	Ile	Ala	Gln	Pro	Gly	Asp	His	Val	Ser	Val				
305								310				315							
Thr	Gly	Ile	Phe	Leu	Pro	Ile	Leu	Arg	Thr	Gly	Phe	Arg	Gln	Val	Val				
				325								330							
Gln	Gly	Leu	Leu	Ser	Glu	Thr	Tyr	Leu	Glu	Ala	His	Arg	Ile	Val	Lys				
340								345				350							
Met	Asn	Lys	Ser	Glu	Asp	Asp	Glu	Ser	Gly	Ala	Gly	Glu	Leu	Thr	Arg				

1443

355	360	365
Glu Glu Leu Arg Gln Ile Ala	Glu Glu Asp Phe Tyr Glu Lys Leu Ala	
370	375	380
Ala Ser Ile Ala Pro Glu Ile Tyr Gly His Glu Asp Val Lys Lys Ala		
385	390	395 400
Leu Leu Leu Leu Leu Val Gly Gly Val Asp Gln Ser Pro Arg Gly Met		
405	410	415
Lys Ile Arg Gly Asn Ile Asn Ile Cys Leu Met Gly Asp Pro Gly Val		
420	425	430
Ala Lys Ser Gln Leu Leu Ser Tyr Ile Asp Arg Leu Ala Pro Arg Ser		
435	440	445
Gln Tyr Thr Thr Gly Arg Gly Ser Ser Gly Val Gly Leu Thr Ala Ala		
450	455	460
Val Leu Arg Asp Ser Val Ser Gly Glu Leu Thr Leu Glu Gly Gly Ala		
465	470	475 480
Leu Val Leu Ala Asp Gln Gly Val Cys Cys Ile Asp Glu Phe Asp Lys		
485	490	495
Met Ala Glu Ala Asp Arg Thr Ala Ile His Glu Val Met Glu Gln Gln		
500	505	510
Thr Ile Ser Ile Ala Lys Ala Gly Ile Leu Thr Thr Leu Asn Ala Arg		
515	520	525
Cys Ser Ile Leu Ala Ala Ala Asn Pro Ala Tyr Gly Arg Tyr Asn Pro		
530	535	540
Arg Arg Ser Leu Glu Gln Asn Ile Gln Leu Pro Ala Ala Leu Leu Ser		
545	550	555 560
Arg Phe Asp Leu Leu Trp Leu Ile Gln Asp Arg Pro Asp Arg Asp Asn		
565	570	575
Asp Leu Arg Leu Ala Gln His Ile Thr Tyr Val His Gln His Ser Arg		
580	585	590
Gln Pro Pro Ser Gln Phe Glu Pro Leu Asp Met Lys Leu Met Arg Arg		
595	600	605
Tyr Ile Ala Met Cys Arg Glu Lys Gln Pro Met Val Pro Glu Ser Leu		
610	615	620
Ala Asp Tyr Ile Thr Ala Ala Tyr Val Glu Met Arg Arg Glu Ala Trp		

1444

625                      630                      635                      640  
 Ala Ser Lys Asp Ala Thr Tyr Thr Ser Ala Arg Thr Leu Leu Ala Ile  
                                 645                      650                      655  
 Leu Arg Leu Ser Thr Ala Leu Ala Arg Leu Arg Met Val Asp Val Val  
                                 660                      665                      670  
 Glu Lys Glu Asp Val Asn Glu Ala Ile Arg Leu Met Glu Met Ser Lys  
                                 675                      680                      685  
 Asp Ser Leu Leu Gly Asp Lys Gly Gln Thr Ala Arg Thr Gln Arg Pro  
                                 690                      695                      700  
 Ala Asp Val Ile Phe Ala Thr Val Arg Glu Leu Val Ser Gly Gly Arg  
 705                                  710                      715                      720  
 Ser Val Arg Phe Ser Glu Ala Glu Gln Arg Cys Val Ser Arg Gly Phe  
                                 725                      730                      735  
 Thr Pro Ala Gln Phe Gln Ala Ala Leu Asp Glu Tyr Glu Glu Leu Asn  
                                 740                      745                      750  
 Val Trp Gln Val Asn Ala Ser Arg Thr Arg Ile Thr Phe Val  
                                 755                      760                      765

&lt;210&gt; 1383

&lt;211&gt; 296

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1383

Phe Arg Pro Gly Ser Pro Arg Gln Pro Arg Ala Gln Pro Ile Ser Ala  
   1                                5                                10                                15  
 Pro Asp Cys Thr Arg Ala Met Val Gly Arg Arg Ala Leu Ile Val Leu  
                                 20                                25                                30  
 Ala His Ser Glu Arg Thr Ser Phe Asn Tyr Ala Met Lys Glu Ala Ala  
                                 35                                40                                45  
 Ala Ala Ala Leu Lys Lys Lys Gly Trp Glu Val Val Glu Ser Asp Leu  
                                 50                                55                                60  
 Tyr Ala Met Asn Phe Asn Pro Ile Ile Ser Arg Lys Asp Ile Thr Gly  
   65                                70                                75                                80  
 Lys Leu Lys Asp Pro Ala Asn Phe Gln Tyr Pro Ala Glu Ser Val Leu  
                                 85                                90                                95

1445

Ala Tyr Lys Glu Gly His Leu Ser Pro Asp Ile Val Ala Glu Gln Lys  
 100 105 110  
 Lys Leu Glu Ala Ala Asp Leu Val Ile Phe Gln Phe Pro Leu Gln Trp  
 115 120 125  
 Phe Gly Val Pro Ala Ile Leu Lys Gly Trp Phe Glu Arg Val Phe Ile  
 130 135 140  
 Gly Glu Phe Ala Tyr Thr Tyr Ala Ala Met Tyr Asp Lys Gly Pro Phe  
 145 150 155 160  
 Arg Ser Lys Lys Ala Val Leu Ser Ile Thr Thr Gly Gly Ser Gly Ser  
 165 170 175  
 Met Tyr Ser Leu Gln Gly Ile His Gly Asp Met Asn Val Ile Leu Trp  
 180 185 190  
 Pro Ile Gln Ser Gly Ile Leu His Phe Cys Gly Phe Gln Val Leu Glu  
 195 200 205  
 Pro Gln Leu Thr Tyr Ser Ile Gly His Thr Pro Ala Asp Ala Arg Ile  
 210 215 220  
 Gln Ile Leu Glu Gly Trp Lys Lys Arg Leu Glu Asn Ile Trp Asp Glu  
 225 230 235 240  
 Thr Pro Leu Tyr Phe Ala Pro Ser Ser Leu Phe Asp Leu Asn Phe Gln  
 245 250 255  
 Ala Gly Phe Leu Met Lys Lys Glu Val Gln Asp Glu Glu Lys Asn Lys  
 260 265 270  
 Lys Phe Gly Leu Ser Val Gly His His Leu Gly Lys Ser Ile Pro Thr  
 275 280 285  
 Asp Asn Gln Ile Lys Ala Arg Lys  
 290 295

&lt;210&gt; 1384

&lt;211&gt; 165

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1384

Asp Pro Arg Thr Met Asn Leu Ala Ile Ser Ile Ala Leu Leu Leu Thr  
 1 5 10 15

1446

Val Leu Gln Val Ser Arg Gly Gln Lys Val Thr Ser Leu Thr Ala Cys  
                   20                  25                  30  
 Leu Val Asp Gln Ser Leu Arg Leu Asp Cys Arg His Glu Asn Thr Ser  
                   35                  40                  45  
 Ser Ser Pro Ile Gln Tyr Glu Phe Ser Leu Thr Arg Glu Thr Lys Lys  
                   50                  55                  60  
 His Val Leu Phe Gly Thr Val Gly Val Pro Glu His Thr Tyr Arg Ser  
                   65                  70                  75                  80  
 Arg Thr Asn Phe Thr Ser Lys Tyr Asn Met Lys Val Leu Tyr Leu Ser  
                   85                  90                  95  
 Ala Phe Thr Ser Lys Asp Glu Gly Thr Tyr Thr Cys Ala Leu His His  
                   100                  105                  110  
 Ser Gly His Ser Pro Pro Ile Ser Ser Gln Asn Val Thr Val Leu Arg  
                   115                  120                  125  
 Asp Lys Leu Val Lys Cys Glu Gly Ile Ser Leu Leu Ala Gln Asn Thr  
                   130                  135                  140  
 Ser Trp Leu Leu Leu Leu Leu Leu Ser Leu Ser Leu Leu Gln Ala Thr  
                   145                  150                  155                  160  
 Asp Phe Met Ser Leu  
                   165

&lt;210&gt; 1385

&lt;211&gt; 399

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1385

His Glu Arg Thr Pro Ser Arg Pro Gln Pro Asp Thr Pro Arg Gly Pro  
   1                  5                  10                  15  
 Pro Val Ser Arg Gly Cys Ser Pro Arg His Gly Thr Gly Pro Arg Leu  
                   20                  25                  30  
 Thr Met Ala Ala Ala Arg His Ser Thr Leu Asp Phe Met Leu Gly Ala  
                   35                  40                  45  
 Lys Ala Asp Gly Glu Thr Ile Leu Lys Gly Leu Gln Ser Ile Phe Gln  
                   50                  55                  60  
 Glu Gln Gly Met Ala Glu Ser Val His Thr Trp Gln Asp His Gly Tyr

1447

65		70		75		80
Leu Ala Thr Tyr Thr Asn Lys Asn Gly Ser Phe Ala Asn Leu Arg Ile						
	85			90		95
Tyr Pro His Gly Leu Val Leu Leu Asp Leu Gln Ser Tyr Asp Gly Asp						
	100			105		110
Ala Gln Gly Lys Glu Glu Ile Asp Ser Ile Leu Asn Lys Val Glu Glu						
	115			120		125
Arg Met Lys Glu Leu Ser Gln Asp Ser Thr Gly Arg Val Lys Arg Leu						
	130			135		140
Pro Pro Ile Val Arg Gly Gly Ala Ile Asp Arg Tyr Trp Pro Thr Ala						
	145			150		155
Asp Gly Arg Leu Val Glu Tyr Asp Ile Asp Glu Val Val Tyr Asp Glu						
	165			170		175
Asp Ser Pro Tyr Gln Asn Ile Lys Ile Leu His Ser Lys Gln Phe Gly						
	180			185		190
Asn Ile Leu Ile Leu Ser Gly Asp Val Asn Leu Ala Glu Ser Asp Leu						
	195			200		205
Ala Tyr Thr Arg Ala Ile Met Gly Ser Gly Lys Glu Asp Tyr Thr Gly						
	210			215		220
Lys Asp Val Leu Ile Leu Gly Gly Gly Asp Gly Gly Ile Leu Cys Glu						
	225			230		235
Ile Val Lys Leu Lys Pro Lys Met Val Thr Met Val Glu Ile Asp Gln						
	245			250		255
Met Val Ile Asp Gly Cys Lys Lys Tyr Met Arg Lys Thr Cys Gly Asp						
	260			265		270
Val Leu Asp Asn Leu Lys Gly Asp Cys Tyr Gln Val Leu Ile Glu Asp						
	275			280		285
Cys Ile Pro Val Leu Lys Arg Tyr Ala Lys Glu Gly Arg Glu Phe Asp						
	290			295		300
Tyr Val Ile Asn Asp Leu Thr Ala Val Pro Ile Ser Thr Ser Pro Glu						
	305			310		315
Glu Asp Ser Thr Trp Glu Phe Leu Arg Leu Ile Leu Asp Leu Ser Met						
	325			330		335
Lys Val Leu Lys Gln Asp Gly Lys Tyr Phe Thr Gln Gly Asn Cys Val						

1448

340                      345                      350  
 Asn Leu Thr Glu Ala Leu Ser Leu Tyr Glu Glu Gln Leu Gly Arg Leu  
                     355                      360                      365  
 Tyr Cys Pro Val Glu Phe Ser Lys Glu Ile Val Cys Val Pro Ser Tyr  
                     370                      375                      380  
 Leu Glu Leu Trp Val Phe Tyr Thr Val Trp Lys Lys Ala Lys Pro  
 385                      390                      395

&lt;210&gt; 1386

&lt;211&gt; 287

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1386

Phe Asp Cys Arg Asp Val Ala Phe Thr Val Gly Glu Gly Glu Asp His  
   1                    5                    10                    15  
 Asp Ile Pro Ile Gly Ile Asp Lys Ala Leu Glu Lys Met Gln Arg Glu  
                     20                    25                    30  
 Glu Gln Cys Ile Leu Tyr Leu Gly Pro Arg Tyr Gly Phe Gly Glu Ala  
                     35                    40                    45  
 Gly Lys Pro Lys Phe Gly Ile Glu Pro Asn Ala Glu Leu Ile Tyr Glu  
                     50                    55                    60  
 Val Thr Leu Lys Ser Phe Glu Lys Ala Lys Glu Ser Trp Glu Met Asp  
   65                    70                    75                    80  
 Thr Lys Glu Lys Leu Glu Gln Ala Ala Ile Val Lys Glu Lys Gly Thr  
                     85                    90                    95  
 Val Tyr Phe Lys Gly Gly Lys Tyr Met Gln Ala Val Ile Gln Tyr Gly  
                     100                    105                    110  
 Lys Ile Val Ser Trp Leu Glu Met Glu Tyr Gly Leu Ser Glu Lys Glu  
                     115                    120                    125  
 Ser Lys Ala Ser Glu Ser Phe Leu Leu Ala Ala Phe Leu Asn Leu Ala  
                     130                    135                    140  
 Met Cys Tyr Leu Lys Leu Arg Glu Tyr Thr Lys Ala Val Glu Cys Cys  
   145                    150                    155                    160  
 Asp Lys Ala Leu Gly Leu Asp Ser Ala Asn Glu Lys Gly Leu Tyr Arg  
                     165                    170                    175

1449

Arg Gly Glu Ala Gln Leu Leu Met Asn Glu Phe Glu Ser Ala Lys Gly  
 180 185 190  
 Asp Phe Glu Lys Val Leu Glu Val Asn Pro Gln Asn Lys Ala Ala Arg  
 195 200 205  
 Leu Gln Ile Ser Met Cys Gln Lys Lys Ala Lys Glu His Asn Glu Arg  
 210 215 220  
 Asp Arg Arg Tyr Thr Pro Thr Cys Ser Arg Ser Leu Gln Ser Arg Met  
 225 230 235 240  
 Pro Arg Lys Arg Pro Ile Lys Gln Trp Ala Arg Arg Leu Gln Lys Gly  
 245 250 255  
 Ser Leu Met Lys Lys Glu Gln Thr Val Lys Gln Trp Lys Lys Arg Asn  
 260 265 270  
 Leu Arg Ala Thr Tyr Asp Ala Thr Pro Arg Arg Glu Glu Ser Gln  
 275 280 285

&lt;210&gt; 1387

&lt;211&gt; 206

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1387

Arg Leu Pro Ile Arg Gln Ser Ala Ala Asp Gly Leu Arg Ala Arg Pro  
 1 5 10 15  
 Leu Gly Ser Asn Thr Ala Pro Ala Leu Arg Val Met Val Gln Ala Trp  
 20 25 30  
 Tyr Met Asp Asp Ala Pro Gly Asp Pro Arg Gln Pro His Arg Pro Asp  
 35 40 45  
 Pro Gly Arg Pro Val Gly Leu Glu Gln Leu Arg Arg Leu Gly Val Leu  
 50 55 60  
 Tyr Trp Lys Leu Asp Ala Asp Lys Tyr Glu Asn Asp Pro Glu Leu Glu  
 65 70 75 80  
 Lys Ile Arg Arg Glu Arg Asn Tyr Ser Trp Met Asp Ile Ile Thr Ile  
 85 90 95  
 Cys Lys Asp Lys Leu Pro Asn Tyr Glu Glu Lys Ile Lys Met Phe Tyr  
 100 105 110



1450

Glu	Glu	His	Leu	His	Leu	Asp	Asp	Glu	Ile	Arg	Tyr	Ile	Leu	Asp	Gly
115							120			125					
Ser	Gly	Tyr	Phe	Asp	Val	Arg	Asp	Lys	Glu	Asp	Gln	Trp	Ile	Arg	Ile
130							135			140					
Phe	Met	Glu	Lys	Gly	Asp	Met	Val	Thr	Leu	Pro	Ala	Gly	Ile	Tyr	His
145							150			155					
Arg	Phe	Thr	Val	Asp	Glu	Lys	Asn	Tyr	Thr	Lys	Ala	Met	Arg	Leu	Phe
165							170			175					
Val	Gly	Glu	Pro	Val	Trp	Thr	Ala	Tyr	Asn	Arg	Pro	Ala	Asp	His	Phe
180							185			190					
Glu	Ala	Arg	Gly	Gln	Tyr	Val	Lys	Phe	Leu	Ala	Gln	Thr	Ala		
195							200			205					

<210> 1388

<211> 394

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1388

Phe	His	Xaa	Ala	Ala	His	Tyr	Ser	Leu	Pro	Asp	Gly	Arg	His	Gly	Arg
1				5					10					15	
Leu	Asp	Ser	Pro	Thr	Phe	His	Leu	Thr	Leu	His	Tyr	Pro	Thr	Glu	His
			20					25					30		
Val	Gln	Phe	Trp	Val	Gly	Ser	Pro	Ser	Thr	Pro	Ala	Gly	Trp	Val	Arg
		35					40					45			
Glu	Gly	Asp	Thr	Val	Gln	Leu	Leu	Cys	Arg	Gly	Asp	Gly	Ser	Pro	Ser
	50					55					60				
Pro	Glu	Tyr	Thr	Leu	Phe	Arg	Leu	Gln	Asp	Glu	Gln	Glu	Glu	Val	Leu
65					70					75					80
Asn	Val	Asn	Leu	Glu	Gly	Asn	Leu	Thr	Leu	Glu	Gly	Val	Thr	Arg	Gly
				85					90					95	
Gln	Ser	Gly	Thr	Tyr	Gly	Cys	Arg	Val	Glu	Asp	Tyr	Asp	Ala	Ala	Asp
			100					105					110		

1451

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Asp Val Gln Leu Ser Lys Thr Leu Glu Leu Arg Val Ala Tyr Leu Asp
    115                      120                      125

Pro Leu Glu Leu Ser Glu Gly Lys Val Leu Ser Leu Pro Leu Asn Ser
    130                      135                      140

Ser Ala Val Val Asn Cys Ser Val His Gly Leu Pro Thr Pro Ala Leu
    145                      150                      155                      160

Arg Trp Thr Lys Asp Ser Thr Pro Leu Gly Asp Gly Pro Met Leu Ser
                      165                      170                      175

Leu Ser Ser Ile Thr Phe Asp Ser Asn Gly Thr Tyr Val Cys Glu Ala
                      180                      185                      190

Ser Leu Pro Thr Val Pro Val Leu Ser Arg Thr Gln Asn Phe Thr Leu
                      195                      200                      205

Leu Val Gln Gly Ser Pro Glu Leu Lys Thr Ala Glu Ile Glu Pro Lys
    210                      215                      220

Ala Asp Gly Ser Trp Arg Glu Gly Asp Glu Val Thr Leu Ile Cys Ser
    225                      230                      235                      240

Ala Arg Gly His Pro Asp Pro Lys Leu Ser Trp Ser Gln Leu Gly Gly
                      245                      250                      255

Ser Pro Ala Glu Pro Ile Pro Gly Arg Gln Gly Trp Val Ser Ser Ser
                      260                      265                      270

Leu Thr Leu Lys Val Thr Ser Ala Leu Ser Arg Asp Gly Ile Ser Cys
                      275                      280                      285

Glu Ala Ser Asn Pro His Gly Asn Lys Arg His Val Phe His Phe Gly
    290                      295                      300

Thr Val Ser Pro Gln Thr Ser Gln Ala Gly Val Ala Val Met Ala Val
    305                      310                      315                      320

Ala Val Ser Val Gly Leu Leu Leu Leu Val Val Ala Val Phe Tyr Cys
                      325                      330                      335

Val Arg Arg Lys Gly Gly Pro Cys Cys Arg Gln Arg Arg Glu Lys Gly
                      340                      345                      350

Ala Pro Pro Pro Gly Glu Pro Gly Leu Ser His Ser Gly Ser Glu Gln
                      355                      360                      365

Pro Glu Gln Thr Gly Leu Leu Met Gly Gly Ala Ser Gly Gly Ala Arg
    370                      375                      380

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1452

Gly Gly Ser Gly Gly Phe Gly Asp Glu Cys  
 385 390

<210> 1389

<211> 264

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (16)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1389

Val Gly Cys Arg Trp Ser Arg Val Gly Pro Gln Asn Pro Arg Val Xaa  
 1 5 10 15

Leu Pro Pro Pro Thr Leu Ala Met Phe Leu Thr Arg Ser Glu Tyr Asp  
 20 25 30

Arg Gly Val Asn Thr Phe Ser Pro Glu Gly Arg Leu Phe Gln Val Glu  
 35 40 45

Tyr Ala Ile Glu Ala Ile Lys Leu Gly Ser Thr Ala Ile Gly Ile Gln  
 50 55 60

Thr Ser Glu Gly Val Cys Leu Ala Val Glu Lys Arg Ile Thr Ser Pro  
 65 70 75 80

Leu Met Glu Pro Ser Ser Ile Glu Lys Ile Val Glu Ile Asp Ala His  
 85 90 95

Ile Gly Cys Ala Met Ser Gly Leu Ile Ala Asp Ala Lys Thr Leu Ile  
 100 105 110

Asp Lys Ala Arg Val Glu Thr Gln Asn His Trp Phe Thr Tyr Asn Glu  
 115 120 125

Thr Met Thr Val Glu Ser Val Thr Gln Ala Val Ser Asn Leu Ala Leu  
 130 135 140

Gln Phe Gly Glu Glu Asp Ala Asp Pro Gly Ala Met Ser Arg Pro Phe  
 145 150 155 160

Gly Val Ala Leu Leu Phe Gly Gly Val Asp Glu Lys Gly Pro Gln Leu  
 165 170 175

Phe His Met Asp Pro Ser Gly Thr Phe Val Gln Cys Asp Ala Arg Ala

1453

180                      185                      190  
 Ile Gly Ser Ala Ser Glu Gly Ala Gln Ser Ser Leu Gln Glu Val Tyr  
       195                      200                      205  
 His Lys Ser Met Thr Leu Lys Glu Ala Ile Lys Ser Ser Leu Ile Ile  
       210                      215                      220  
 Leu Lys Gln Val Met Glu Glu Lys Leu Asn Ala Thr Asn Ile Glu Leu  
 225                      230                      235                      240  
 Ala Thr Val Gln Pro Gly Gln Asn Phe His Met Phe Thr Lys Glu Glu  
                          245                      250                      255  
 Leu Glu Glu Val Ile Lys Asp Ile  
                          260  
  
 <210> 1390  
 <211> 178  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 1390  
 Gln Lys Leu Glu Leu His Arg Gly Gly Gly Arg Ser Arg Thr Ser Gly  
       1                      5                      10                      15  
 Ser Pro Gly Leu Phe Gly Leu Ser Ala Arg Arg Leu Leu Ala Ala Ala  
                          20                      25                      30  
 Ala Thr Arg Gly Leu Pro Ala Ala Arg Val Arg Trp Glu Ser Ser Phe  
                          35                      40                      45  
 Ser Arg Thr Val Val Ala Pro Ser Ala Val Ala Gly Lys Arg Pro Pro  
                          50                      55                      60  
 Glu Pro Thr Thr Pro Trp Gln Glu Asp Pro Glu Pro Glu Asp Glu Asn  
 65                      70                      75                      80  
 Leu Tyr Glu Lys Asn Pro Asp Ser His Gly Tyr Asp Lys Asp Pro Val  
                          85                      90                      95  
 Leu Asp Val Trp Asn Met Arg Leu Val Phe Phe Phe Gly Val Ser Ile  
                          100                      105                      110  
 Ile Leu Val Leu Gly Ser Thr Phe Val Ala Tyr Leu Pro Asp Tyr Arg  
                          115                      120                      125  
 Cys Thr Gly Cys Pro Arg Ala Trp Asp Gly Met Lys Glu Trp Ser Arg  
                          130                      135                      140

1454

Arg Glu Ala Glu Arg Leu Val Lys Tyr Arg Glu Ala Asn Gly Leu Pro  
 145 150 155 160

Ile Met Glu Ser Asn Cys Phe Asp Pro Ser Lys Ile Gln Leu Pro Glu  
 165 170 175

Asp Glu

<210> 1391

<211> 133

<212> PRT

<213> Homo sapiens

<400> 1391

Val Ile Ile Thr Ser Ile Asn Gln Lys Ile Phe His Pro Leu Arg Ala  
 1 5 10 15

Leu Lys Leu Ser Thr Ser Ala Thr Phe Leu Ile Leu Val Leu Gly Gly  
 20 25 30

His Val Tyr Gly Leu Phe Asn Phe His Val Pro Tyr Cys Pro Leu Pro  
 35 40 45

Ala Val Ala Lys Ala Ser Cys Phe Ser Pro Thr Glu Glu Thr Val Leu  
 50 55 60

Cys His Asp Asp Arg Ala Leu Leu Gly Leu Val Phe Leu Val Phe Pro  
 65 70 75 80

Phe Trp Gln Cys Gly Leu Gln Glu Leu Asp Val Tyr Ala Gln Gly Ile  
 85 90 95

Glu Phe Thr Leu Lys Leu Gly Asn Gly Val Phe Asn Leu Cys Ser Cys  
 100 105 110

Leu Phe Ile Leu Leu Phe Ile Phe Cys His Pro Ala Leu Tyr Trp Ala  
 115 120 125

Asn Asn Glu Ile Lys  
 130

<210> 1392

<211> 401

<212> PRT

<213> Homo sapiens

1455

&lt;400&gt; 1392

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Asn Thr Val Leu Lys Lys Met Asp Glu Glu Pro Glu Arg Thr Lys Arg
 1              5              10              15

Trp Glu Gly Gly Tyr Glu Arg Thr Trp Glu Ile Leu Lys Glu Asp Glu
      20              25              30

Ser Gly Ser Leu Lys Ala Thr Ile Glu Asp Ile Leu Phe Lys Ala Lys
      35              40              45

Arg Lys Arg Val Phe Glu His His Gly Gln Val Arg Leu Gly Met Met
      50              55              60

Arg His Leu Tyr Val Val Val Asp Gly Ser Arg Thr Met Glu Asp Gln
      65              70              75              80

Asp Leu Lys Pro Asn Arg Leu Thr Cys Thr Leu Lys Leu Leu Glu Tyr
      85              90              95

Phe Val Glu Glu Tyr Phe Asp Gln Asn Pro Ile Ser Gln Ile Gly Ile
      100             105             110

Ile Val Thr Lys Ser Lys Arg Ala Glu Lys Leu Thr Glu Leu Ser Gly
      115             120             125

Asn Pro Arg Lys His Ile Thr Ser Leu Lys Lys Ala Val Asp Met Thr
      130             135             140

Cys His Gly Glu Pro Ser Leu Tyr Asn Ser Leu Ser Ile Ala Met Gln
      145             150             155             160

Thr Leu Lys His Met Pro Gly His Thr Ser Arg Glu Val Leu Ile Ile
      165             170             175

Phe Ser Ser Leu Thr Thr Cys Asp Pro Ser Asn Ile Tyr Asp Leu Ile
      180             185             190

Lys Thr Leu Lys Ala Ala Lys Ile Arg Val Ser Val Ile Gly Leu Ser
      195             200             205

Ala Glu Val Arg Val Cys Thr Val Leu Ala Arg Glu Thr Gly Gly Thr
      210             215             220

Tyr His Val Ile Leu Asp Glu Ser His Tyr Lys Glu Leu Leu Thr His
      225             230             235             240

His Val Ser Pro Pro Pro Ala Ser Ser Ser Ser Glu Cys Ser Leu Ile
      245             250             255

Arg Met Gly Phe Pro Gln His Thr Ile Ala Ser Leu Ser Asp Gln Asp

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1456

260	265	270
Ala Lys Pro Ser Phe Ser Met	Ala His Leu Asp Gly Asn Thr Glu Pro	
275	280	285
Gly Leu Thr Leu Gly Gly Tyr Phe Cys Pro Gln Cys Arg Ala Lys Tyr		
290	295	300
Cys Glu Leu Pro Val Glu Cys Lys Ile Cys Gly Leu Thr Leu Val Ser		
305	310	315
Ala Pro His Leu Ala Arg Ser Tyr His His Leu Phe Pro Leu Asp Ala		
325	330	335
Phe Gln Glu Ile Pro Leu Glu Glu Tyr Asn Gly Glu Arg Phe Cys Tyr		
340	345	350
Gly Cys Gln Gly Glu Leu Lys Asp Gln His Val Tyr Val Cys Ala Val		
355	360	365
Cys Gln Asn Val Phe Cys Val Asp Cys Asp Val Phe Val His Asp Ser		
370	375	380
Leu His Cys Cys Pro Gly Cys Ile His Lys Ile Pro Ala Pro Ser Gly		
385	390	395
		400
Val		

&lt;210&gt; 1393

&lt;211&gt; 318

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1393

Pro Glu Gly Leu Pro Arg Phe Asn Asn Asn Phe Met Ala Pro Gly Ser		
1	5	10
Ala Ser Ser Pro Ser Pro Ser Phe Pro Ala Ser Arg Pro Trp Ala Ala		
20	25	30
Val Gly Thr Met Ala Ala Ala Ala Ala Ala Gly Pro Ser Pro Gly Ser		
35	40	45
Gly Pro Gly Asp Ser Pro Glu Gly Pro Glu Gly Glu Ala Pro Glu Arg		
50	55	60
Arg Arg Lys Ala His Gly Met Leu Lys Leu Tyr Tyr Gly Leu Ser Glu		
65	70	75
		80

1457

Gly Glu Ala Ala Gly Arg Pro Ala Gly Pro Asp Pro Leu Asp Pro Thr  
                             85                            90                            95  
 Asp Leu Asn Gly Ala His Phe Asp Pro Glu Val Tyr Leu Asp Lys Leu  
                             100                            105                            110  
 Arg Arg Glu Cys Pro Leu Ala Gln Leu Met Asp Ser Glu Thr Asp Met  
                             115                            120                            125  
 Val Arg Gln Ile Arg Ala Leu Asp Ser Asp Met Gln Thr Leu Val Tyr  
                             130                            135                            140  
 Glu Asn Tyr Asn Lys Phe Ile Ser Ala Thr Asp Thr Ile Arg Lys Met  
 145                            150                            155                            160  
 Lys Asn Asp Phe Arg Lys Met Glu Asp Glu Met Asp Arg Leu Ala Thr  
                             165                            170                            175  
 Asn Met Ala Val Ile Thr Asp Phe Ser Ala Arg Ile Ser Ala Thr Leu  
                             180                            185                            190  
 Gln Asp Arg His Glu Arg Ile Thr Lys Leu Ala Gly Val His Ala Leu  
                             195                            200                            205  
 Leu Arg Lys Leu Gln Phe Leu Phe Glu Leu Pro Ser Arg Leu Thr Lys  
                             210                            215                            220  
 Cys Val Glu Leu Gly Ala Tyr Gly Gln Ala Val Arg Tyr Gln Gly Arg  
 225                            230                            235                            240  
 Ala Gln Ala Val Leu Gln Gln Tyr Gln His Leu Pro Ser Phe Arg Ala  
                             245                            250                            255  
 Ile Gln Asp Asp Cys Gln Val Ile Thr Ala Arg Leu Ala Gln Gln Leu  
                             260                            265                            270  
 Arg Gln Arg Phe Arg Glu Gly Gly Ser Gly Ala Pro Glu Gln Ala Glu  
                             275                            280                            285  
 Cys Val Glu Leu Leu Leu Ala Leu Gly Glu Pro Ala Glu Glu Leu Cys  
                             290                            295                            300  
 Glu Glu Phe Trp Arg Thr Pro Ala Ala Gly Trp Arg Arg Ser  
 305                            310                            315

&lt;210&gt; 1394

&lt;211&gt; 1285

&lt;212&gt; PRT



1458

&lt;213&gt; Homo sapiens

&lt;400&gt; 1394

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Phe Ser Phe Pro Leu Ser Ser Glu Pro Phe Gln Gly Ser Tyr Lys Val
 1           5           10           15

Val Val Gln Lys Lys Ser Gly Gly Arg Thr Glu His Pro Phe Thr Val
          20           25           30

Glu Glu Phe Val Leu Pro Lys Phe Glu Val Gln Val Thr Val Pro Lys
          35           40           45

Ile Ile Thr Ile Leu Glu Glu Glu Met Asn Val Ser Val Cys Gly Leu
 50           55           60

Tyr Thr Tyr Gly Lys Pro Val Pro Gly His Val Thr Val Ser Ile Cys
 65           70           75           80

Arg Lys Tyr Ser Asp Ala Ser Asp Cys His Gly Glu Asp Ser Gln Ala
          85           90           95

Phe Cys Glu Lys Phe Ser Gly Gln Leu Asn Ser His Gly Cys Phe Tyr
          100          105          110

Gln Gln Val Lys Thr Lys Val Phe Gln Leu Lys Arg Lys Glu Tyr Glu
          115          120          125

Met Lys Leu His Thr Glu Ala Gln Ile Gln Glu Glu Gly Thr Val Val
          130          135          140

Glu Leu Thr Gly Arg Gln Ser Ser Glu Ile Thr Arg Thr Ile Thr Lys
          145          150          155          160

Leu Ser Phe Val Lys Val Asp Ser His Phe Arg Gln Gly Ile Pro Phe
          165          170          175

Phe Gly Gln Val Arg Leu Val Asp Gly Lys Gly Val Pro Ile Pro Asn
          180          185          190

Lys Val Ile Phe Ile Arg Gly Asn Glu Ala Asn Tyr Tyr Ser Asn Ala
          195          200          205

Thr Thr Asp Glu His Gly Leu Val Gln Phe Ser Ile Asn Thr Thr Asn
          210          215          220

Val Met Gly Thr Ser Leu Thr Val Arg Val Asn Tyr Lys Asp Arg Ser
          225          230          235          240

Pro Cys Tyr Gly Tyr Gln Trp Val Ser Glu Glu His Glu Glu Ala His
          245          250          255

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1459

His Thr Ala Tyr Leu Val Phe Ser Pro Ser Lys Ser Phe Val His Leu  
 260 265 270  
 Glu Pro Met Ser His Glu Leu Pro Cys Gly His Thr Gln Thr Val Gln  
 275 280 285  
 Ala His Tyr Ile Leu Asn Gly Gly Thr Leu Leu Gly Leu Lys Lys Leu  
 290 295 300  
 Ser Phe Tyr Tyr Leu Ile Met Ala Lys Gly Gly Ile Val Arg Thr Gly  
 305 310 315 320  
 Thr His Gly Leu Leu Val Lys Gln Glu Asp Met Lys Gly His Phe Ser  
 325 330 335  
 Ile Ser Ile Pro Val Lys Ser Asp Ile Ala Pro Val Ala Arg Leu Leu  
 340 345 350  
 Ile Tyr Ala Val Leu Pro Thr Gly Asp Val Ile Gly Asp Ser Ala Lys  
 355 360 365  
 Tyr Asp Val Glu Asn Cys Leu Ala Asn Lys Val Asp Leu Ser Phe Ser  
 370 375 380  
 Pro Ser Gln Ser Leu Pro Ala Ser His Ala His Leu Arg Val Thr Ala  
 385 390 395 400  
 Ala Pro Gln Ser Val Cys Ala Leu Arg Ala Val Asp Gln Ser Val Leu  
 405 410 415  
 Leu Met Lys Pro Asp Ala Glu Leu Ser Ala Ser Ser Val Tyr Asn Leu  
 420 425 430  
 Leu Pro Glu Lys Asp Leu Thr Gly Phe Pro Gly Pro Leu Asn Asp Gln  
 435 440 445  
 Asp Asp Glu Asp Cys Ile Asn Arg His Asn Val Tyr Ile Asn Gly Ile  
 450 455 460  
 Thr Tyr Thr Pro Val Ser Ser Thr Asn Glu Lys Asp Met Tyr Ser Phe  
 465 470 475 480  
 Leu Glu Asp Met Gly Leu Lys Ala Phe Thr Asn Ser Lys Ile Arg Lys  
 485 490 495  
 Pro Lys Met Cys Pro Gln Leu Gln Gln Tyr Glu Met His Gly Pro Glu  
 500 505 510  
 Gly Leu Arg Val Gly Phe Tyr Glu Ser Asp Val Met Gly Arg Gly His  
 515 520 525

1460

Ala	Arg	Leu	Val	His	Val	Glu	Glu	Pro	His	Thr	Glu	Thr	Val	Arg	Lys	530	535	540
Tyr	Phe	Pro	Glu	Thr	Trp	Ile	Trp	Asp	Leu	Val	Val	Val	Asn	Ser	Ala	545	550	555
Gly	Val	Ala	Glu	Val	Gly	Val	Thr	Val	Pro	Asp	Thr	Ile	Thr	Glu	Trp	565	570	575
Lys	Ala	Gly	Ala	Phe	Cys	Leu	Ser	Glu	Asp	Ala	Gly	Leu	Gly	Ile	Ser	580	585	590
Ser	Thr	Ala	Ser	Leu	Arg	Ala	Phe	Gln	Pro	Phe	Phe	Val	Glu	Leu	Thr	595	600	605
Met	Pro	Tyr	Ser	Val	Ile	Arg	Gly	Glu	Ala	Phe	Thr	Leu	Lys	Ala	Thr	610	615	620
Val	Leu	Asn	Tyr	Leu	Pro	Lys	Cys	Ile	Arg	Val	Ser	Val	Gln	Leu	Glu	625	630	635
Ala	Ser	Pro	Ala	Phe	Leu	Ala	Val	Pro	Val	Glu	Lys	Glu	Gln	Ala	Pro	645	650	655
His	Cys	Ile	Cys	Ala	Asn	Gly	Arg	Gln	Thr	Val	Ser	Trp	Ala	Val	Thr	660	665	670
Pro	Lys	Ser	Leu	Gly	Asn	Val	Asn	Phe	Thr	Val	Ser	Ala	Glu	Ala	Leu	675	680	685
Glu	Ser	Gln	Glu	Leu	Cys	Gly	Thr	Glu	Val	Pro	Ser	Val	Pro	Glu	His	690	695	700
Gly	Arg	Lys	Asp	Thr	Val	Ile	Lys	Pro	Leu	Leu	Val	Glu	Pro	Glu	Gly	705	710	715
Leu	Glu	Lys	Glu	Thr	Thr	Phe	Asn	Ser	Leu	Leu	Cys	Pro	Ser	Gly	Gly	725	730	735
Glu	Val	Ser	Glu	Glu	Leu	Ser	Leu	Lys	Leu	Pro	Pro	Asn	Val	Val	Glu	740	745	750
Glu	Ser	Ala	Arg	Ala	Ser	Val	Ser	Val	Leu	Gly	Asp	Ile	Leu	Gly	Ser	755	760	765
Ala	Met	Gln	Asn	Thr	Gln	Asn	Leu	Leu	Gln	Met	Pro	Tyr	Gly	Cys	Gly	770	775	780
Glu	Gln	Asn	Met	Val	Leu	Phe	Ala	Pro	Asn	Ile	Tyr	Val	Leu	Asp	Tyr	785	790	795
																		800

1461

Leu	Asn	Glu	Thr	Gln	Gln	Leu	Thr	Pro	Glu	Ile	Lys	Ser	Lys	Ala	Ile		
				805						810						815	
Gly	Tyr	Leu	Asn	Thr	Gly	Tyr	Gln	Arg	Gln	Leu	Asn	Tyr	Lys	His	Tyr		
				820						825						830	
Asp	Gly	Ser	Tyr	Ser	Thr	Phe	Gly	Glu	Arg	Tyr	Gly	Arg	Asn	Gln	Gly		
				835						840						845	
Asn	Thr	Trp	Leu	Thr	Ala	Phe	Val	Leu	Lys	Thr	Phe	Ala	Gln	Ala	Arg		
				850						855						860	
Ala	Tyr	Ile	Phe	Ile	Asp	Glu	Ala	His	Ile	Thr	Gln	Ala	Leu	Ile	Trp		
865								870						875		880	
Leu	Ser	Gln	Arg	Gln	Lys	Asp	Asn	Gly	Cys	Phe	Arg	Ser	Ser	Gly	Ser		
				885						890						895	
Leu	Leu	Asn	Asn	Ala	Ile	Lys	Gly	Gly	Val	Glu	Asp	Glu	Val	Thr	Leu		
				900						905						910	
Ser	Ala	Tyr	Ile	Thr	Ile	Ala	Leu	Leu	Glu	Ile	Pro	Leu	Thr	Val	Thr		
				915						920						925	
His	Pro	Val	Val	Arg	Asn	Ala	Leu	Phe	Cys	Leu	Glu	Ser	Ala	Trp	Lys		
				930						935						940	
Thr	Ala	Gln	Glu	Gly	Asp	His	Gly	Ser	His	Val	Tyr	Thr	Lys	Ala	Leu		
945								950						955		960	
Leu	Ala	Tyr	Ala	Phe	Ala	Leu	Ala	Gly	Asn	Gln	Asp	Lys	Arg	Lys	Glu		
				965						970						975	
Val	Leu	Lys	Ser	Leu	Asn	Glu	Glu	Ala	Val	Lys	Lys	Asp	Asn	Ser	Val		
				980						985						990	
His	Trp	Glu	Arg	Pro	Gln	Lys	Pro	Lys	Ala	Pro	Val	Gly	His	Phe	Tyr		
				995						1000						1005	
Glu	Pro	Gln	Ala	Pro	Ser	Ala	Glu	Val	Glu	Met	Thr	Ser	Tyr	Val	Leu		
1010								1015						1020			
Leu	Ala	Tyr	Leu	Thr	Ala	Gln	Pro	Ala	Pro	Thr	Ser	Glu	Asp	Leu	Thr		
025								1030						1035		1040	
Ser	Ala	Thr	Asn	Ile	Val	Lys	Trp	Ile	Thr	Lys	Gln	Gln	Asn	Ala	Gln		
				1045						1050						1055	
Gly	Gly	Phe	Ser	Ser	Thr	Gln	Asp	Thr	Val	Val	Ala	Leu	His	Ala	Leu		
				1060						1065						1070	

1462

Ser Lys Tyr Gly Ala Ala Thr Phe Thr Arg Thr Gly Lys Ala Ala Gln  
 1075 1080 1085  
 Val Thr Ile Gln Ser Ser Gly Thr Phe Ser Ser Lys Phe Gln Val Asp  
 1090 1095 1100  
 Asn Asn Asn Arg Leu Leu Leu Gln Gln Val Ser Leu Pro Glu Leu Pro  
 1105 1110 1115 1120  
 Gly Glu Tyr Ser Met Lys Val Thr Gly Glu Gly Cys Val Tyr Leu Gln  
 1125 1130 1135  
 Thr Ser Leu Lys Tyr Asn Ile Leu Pro Glu Lys Glu Glu Phe Pro Phe  
 1140 1145 1150  
 Ala Leu Gly Val Gln Thr Leu Pro Gln Thr Cys Asp Glu Pro Lys Ala  
 1155 1160 1165  
 His Thr Ser Phe Gln Ile Ser Leu Ser Val Ser Tyr Thr Gly Ser Arg  
 1170 1175 1180  
 Ser Ala Ser Asn Met Ala Ile Val Asp Val Lys Met Val Ser Gly Phe  
 1185 1190 1195 1200  
 Ile Pro Leu Lys Pro Thr Val Lys Met Leu Glu Arg Ser Asn His Val  
 1205 1210 1215  
 Ser Arg Thr Glu Val Ser Ser Asn His Val Leu Ile Tyr Leu Asp Lys  
 1220 1225 1230  
 Val Ser Asn Gln Thr Leu Ser Leu Phe Phe Thr Val Leu Gln Asp Val  
 1235 1240 1245  
 Pro Val Arg Asp Leu Lys Pro Ala Ile Val Lys Val Tyr Asp Tyr Tyr  
 1250 1255 1260  
 Glu Thr Asp Glu Phe Ala Ile Ala Glu Tyr Asn Ala Pro Cys Ser Lys  
 1265 1270 1275 1280  
 Asp Leu Gly Asn Ala  
 1285

&lt;210&gt; 1395

&lt;211&gt; 75

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1395

Ile Thr Lys Asn Ile Tyr Ser Asp Leu Lys Asp Leu Ser Ala Lys Asn

1463

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      1             5             10             15
Gln Ser Ile Ser Cys Pro Ser Ile Ile Val His Ala Cys Leu Leu Leu
      20             25             30
Phe Thr Cys Ser Ser Ala Gln Thr Val Ser Asn Leu Gly Thr Pro Phe
      35             40             45
Gly Ala Asp Lys Tyr Ser Ser Ala Phe Ser Pro Gln Ile Tyr Asn Asp
      50             55             60
Phe Asn Ile Pro Lys Asn Ile Gly Ile Ser Glu
      65             70             75

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&lt;210&gt; 1396

&lt;211&gt; 920

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1396

```

Arg Thr Arg Gly Ile His Gly Glu Met Arg Leu Phe Val Ser Asp Gly
  1             5             10             15
Val Pro Gly Cys Leu Pro Val Leu Ala Ala Ala Gly Arg Ala Arg Gly
      20             25             30
Arg Ala Glu Val Leu Ile Ser Thr Val Gly Pro Glu Asp Cys Val Val
      35             40             45
Pro Phe Leu Thr Arg Pro Lys Val Pro Val Leu Gln Leu Asp Ser Gly
      50             55             60
Asn Tyr Leu Phe Ser Thr Ser Ala Ile Cys Arg Tyr Phe Phe Leu Leu
      65             70             75             80
Ser Gly Trp Glu Gln Asp Asp Leu Thr Asn Gln Trp Leu Glu Trp Glu
      85             90             95
Ala Thr Glu Leu Gln Pro Ala Leu Ser Ala Ala Leu Tyr Tyr Leu Val
      100            105            110
Val Gln Gly Lys Lys Gly Glu Asp Val Leu Gly Ser Val Arg Arg Ala
      115            120            125
Leu Thr His Ile Asp His Ser Leu Ser Arg Gln Asn Cys Pro Phe Leu
      130            135            140
Ala Gly Glu Thr Glu Ser Leu Ala Asp Ile Val Leu Trp Gly Ala Leu
      145            150            155            160

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1464

Tyr Pro Leu Leu Gln Asp Pro Ala Tyr Leu Pro Glu Glu Leu Ser Ala  
 165 170 175

Leu His Ser Trp Phe Gln Thr Leu Ser Thr Gln Glu Pro Cys Gln Arg  
 180 185 190

Ala Ala Glu Thr Val Leu Lys Gln Gln Gly Val Leu Ala Leu Arg Pro  
 195 200 205

Tyr Leu Gln Lys Gln Pro Gln Pro Ser Pro Ala Glu Gly Arg Ala Val  
 210 215 220

Thr Asn Glu Pro Glu Glu Glu Glu Leu Ala Thr Leu Ser Glu Glu Glu  
 225 230 235 240

Ile Ala Met Ala Val Thr Ala Trp Glu Lys Gly Leu Glu Ser Leu Pro  
 245 250 255

Pro Leu Arg Pro Gln Gln Asn Pro Val Leu Pro Val Ala Gly Glu Arg  
 260 265 270

Asn Val Leu Ile Thr Ser Ala Leu Pro Tyr Val Asn Asn Val Pro His  
 275 280 285

Leu Gly Asn Ile Ile Gly Cys Val Leu Ser Ala Asp Val Phe Ala Arg  
 290 295 300

Tyr Ser Arg Leu Arg Gln Trp Asn Thr Leu Tyr Leu Cys Gly Thr Asp  
 305 310 315 320

Glu Tyr Gly Thr Ala Thr Glu Thr Lys Ala Leu Glu Glu Gly Leu Thr  
 325 330 335

Pro Gln Glu Ile Cys Asp Lys Tyr His Ile Ile His Ala Asp Ile Tyr  
 340 345 350

Arg Trp Phe Asn Ile Ser Phe Asp Ile Phe Gly Arg Thr Thr Thr Pro  
 355 360 365

Gln Gln Thr Lys Ile Thr Gln Asp Ile Phe Gln Gln Leu Leu Lys Arg  
 370 375 380

Gly Phe Val Leu Gln Asp Thr Val Glu Gln Leu Arg Cys Glu His Cys  
 385 390 395 400

Ala Arg Phe Leu Ala Asp Arg Phe Val Glu Gly Val Cys Pro Phe Cys  
 405 410 415

Gly Tyr Glu Glu Ala Arg Gly Asp Gln Cys Asp Lys Cys Gly Lys Leu  
 420 425 430

1465

Ile Asn Ala Val Glu Leu Lys Lys Pro Gln Cys Lys Val Cys Arg Ser  
 435 440 445  
 Cys Pro Val Val Gln Ser Ser Gln His Leu Phe Leu Asp Leu Pro Lys  
 450 455 460  
 Leu Glu Lys Arg Leu Glu Glu Trp Leu Gly Arg Thr Leu Pro Gly Ser  
 465 470 475 480  
 Asp Trp Thr Pro Asn Ala Gln Phe Ile Thr Arg Ser Trp Leu Arg Asp  
 485 490 495  
 Gly Leu Lys Pro Arg Cys Ile Thr Arg Asp Leu Lys Trp Gly Thr Pro  
 500 505 510  
 Val Pro Leu Glu Gly Phe Glu Asp Lys Val Phe Tyr Val Trp Phe Asp  
 515 520 525  
 Ala Thr Ile Gly Tyr Leu Ser Ile Thr Ala Asn Tyr Thr Asp Gln Trp  
 530 535 540  
 Glu Arg Trp Trp Lys Asn Pro Glu Gln Val Asp Leu Tyr Gln Phe Met  
 545 550 555 560  
 Ala Lys Asp Asn Val Pro Phe His Ser Leu Val Phe Pro Cys Ser Ala  
 565 570 575  
 Leu Gly Ala Glu Asp Asn Tyr Thr Leu Val Ser His Leu Ile Ala Thr  
 580 585 590  
 Glu Tyr Leu Asn Tyr Glu Asp Gly Lys Phe Ser Lys Ser Arg Gly Val  
 595 600 605  
 Gly Val Phe Gly Asp Met Ala Gln Asp Thr Gly Ile Pro Ala Asp Ile  
 610 615 620  
 Trp Arg Phe Tyr Leu Leu Tyr Ile Arg Pro Glu Gly Gln Asp Ser Ala  
 625 630 635 640  
 Phe Ser Trp Thr Asp Leu Leu Leu Lys Asn Asn Ser Glu Leu Leu Asn  
 645 650 655  
 Asn Leu Gly Asn Phe Ile Asn Arg Ala Gly Met Phe Val Ser Lys Phe  
 660 665 670  
 Phe Gly Gly Tyr Val Pro Glu Met Val Leu Thr Pro Asp Asp Gln Arg  
 675 680 685  
 Leu Leu Ala His Val Thr Leu Glu Leu Gln His Tyr His Gln Leu Leu  
 690 695 700



1466

Glu Lys Val Arg Ile Arg Asp Ala Leu Arg Ser Ile Leu Thr Ile Ser  
705 710 715 720

Arg His Gly Asn Gln Tyr Ile Gln Val Asn Glu Pro Trp Lys Arg Ile  
725 730 735

Lys Gly Ser Glu Ala Asp Arg Gln Arg Ala Gly Thr Val Thr Gly Leu  
740 745 750

Ala Val Asn Ile Ala Ala Leu Leu Ser Val Met Leu Gln Pro Tyr Met  
755 760 765

Pro Thr Val Ser Ala Thr Ile Gln Ala Gln Leu Gln Leu Pro Pro Pro  
770 775 780

Ala Cys Ser Ile Leu Leu Thr Asn Phe Leu Cys Thr Leu Pro Ala Gly  
785 790 795 800

His Gln Ile Gly Thr Val Ser Pro Leu Phe Gln Lys Leu Glu Asn Asp  
805 810 815

Gln Ile Glu Ser Leu Arg Gln Arg Phe Gly Gly Gly Gln Ala Lys Thr  
820 825 830

Ser Pro Lys Pro Ala Val Val Glu Thr Val Thr Thr Ala Lys Pro Gln  
835 840 845

Gln Ile Gln Ala Leu Met Asp Glu Val Thr Lys Gln Gly Asn Ile Val  
850 855 860

Arg Glu Leu Lys Ala Gln Lys Ala Asp Lys Asn Glu Val Ala Ala Glu  
865 870 875 880

Val Ala Lys Leu Leu Asp Leu Lys Lys Gln Leu Ala Val Ala Glu Gly  
885 890 895

Asn Pro Leu Lys Pro Leu Lys Ala Arg Arg Lys Ser Lys Arg Pro Trp  
900 905 910

Leu Ile Glu Ser His Phe Asn Arg  
915 920

&lt;210&gt; 1397

&lt;211&gt; 476

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1467

&lt;221&gt; SITE

&lt;222&gt; (127)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1397

```

Lys Met Ala Ala Leu Thr Thr Leu Phe Lys Tyr Ile Asp Glu Asn Gln
  1             5             10             15

Asp Arg Tyr Ile Lys Lys Leu Ala Lys Trp Val Ala Ile Gln Ser Val
      20             25             30

Ser Ala Trp Pro Glu Lys Arg Gly Glu Ile Arg Arg Met Met Glu Val
      35             40             45

Ala Ala Ala Asp Val Lys Gln Leu Gly Gly Ser Val Glu Leu Val Asp
  50             55             60

Ile Gly Lys Gln Lys Leu Pro Asp Gly Ser Glu Ile Pro Leu Pro Pro
  65             70             75             80

Ile Leu Leu Gly Arg Leu Gly Ser Asp Pro Gln Lys Lys Thr Val Cys
      85             90             95

Ile Tyr Gly His Leu Asp Val Gln Pro Ala Ala Leu Glu Asp Gly Trp
      100            105            110

Asp Ser Glu Pro Phe Thr Leu Val Glu Arg Asp Gly Lys Leu Xaa Gly
      115            120            125

Arg Gly Ser Thr Asp Asp Lys Gly Pro Val Ala Gly Trp Ile Asn Ala
      130            135            140

Leu Glu Ala Tyr Gln Lys Thr Gly Gln Glu Ile Pro Val Asn Val Arg
      145            150            155            160

Phe Cys Leu Glu Gly Met Glu Glu Ser Gly Ser Glu Gly Leu Asp Glu
      165            170            175

Leu Ile Phe Ala Arg Lys Asp Thr Phe Phe Lys Asp Val Asp Tyr Val
      180            185            190

Cys Ile Ser Asp Asn Tyr Trp Leu Gly Lys Lys Lys Pro Cys Ile Thr
      195            200            205

Tyr Gly Leu Arg Gly Ile Cys Tyr Phe Phe Ile Glu Val Glu Cys Ser
      210            215            220

Asn Lys Asp Leu His Ser Gly Val Tyr Gly Gly Ser Val His Glu Ala
      225            230            235            240

Met Thr Asp Leu Ile Leu Leu Met Gly Ser Leu Val Asp Lys Arg Gly

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1468

	245		250		255
Asn Ile Leu Ile Pro Gly Ile Asn Glu Ala Val Ala Ala Val Thr Glu					
260		265		270	
Glu Glu His Lys Leu Tyr Asp Asp Ile Asp Phe Asp Ile Glu Glu Phe					
275		280		285	
Ala Lys Asp Val Gly Ala Gln Ile Leu Leu His Ser His Lys Lys Asp					
290		295		300	
Ile Leu Met His Arg Trp Arg Tyr Pro Ser Leu Ser Leu His Gly Ile					
305		310		315	320
Glu Gly Ala Phe Ser Gly Ser Gly Ala Lys Thr Val Ile Pro Arg Lys					
	325		330		335
Val Val Gly Lys Phe Ser Ile Arg Leu Val Pro Asn Met Thr Pro Glu					
	340		345		350
Val Val Gly Glu Gln Val Thr Ser Tyr Leu Thr Lys Lys Phe Ala Glu					
	355		360		365
Leu Arg Ser Pro Asn Glu Phe Lys Val Tyr Met Gly His Gly Gly Lys					
	370		375		380
Pro Trp Val Ser Asp Phe Ser His Pro His Tyr Leu Ala Gly Arg Arg					
385		390		395	400
Ala Met Lys Thr Val Phe Gly Val Glu Pro Asp Leu Thr Arg Glu Gly					
	405		410		415
Gly Ser Ile Pro Val Thr Leu Thr Phe Gln Glu Ala Thr Gly Lys Asn					
	420		425		430
Val Met Leu Leu Pro Val Gly Ser Ala Asp Asp Gly Ala His Ser Gln					
	435		440		445
Asn Glu Lys Leu Asn Arg Tyr Asn Tyr Ile Glu Gly Thr Lys Met Leu					
	450		455		460
Ala Ala Tyr Leu Tyr Glu Val Ser Gln Leu Lys Asp					
465		470		475	

&lt;210&gt; 1398

&lt;211&gt; 187

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1469

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1398

Leu His Leu Xaa Pro Thr Ser Ile Ser Ser Ser Ser Ser Cys Ser Val  
 1 5 10 15

Ser Ser Val Val Ser Gln Arg Leu Thr Glu Ser Pro Cys Ala Leu Val  
 20 25 30

Ala Ser Gln Tyr Gly Trp Ser Gly Asn Met Glu Arg Ile Met Lys Ala  
 35 40 45

Gln Ala Tyr Gln Thr Gly Lys Asp Ile Ser Thr Asn Tyr Tyr Ala Ser  
 50 55 60

Gln Lys Lys Thr Phe Glu Ile Asn Pro Arg His Pro Leu Ile Arg Asp  
 65 70 75 80

Met Leu Arg Arg Ile Lys Glu Asp Glu Asp Asp Lys Thr Val Leu Asp  
 85 90 95

Leu Ala Val Val Leu Phe Glu Thr Ala Thr Leu Arg Ser Gly Tyr Leu  
 100 105 110

Leu Pro Asp Thr Lys Ala Tyr Gly Asp Arg Ile Glu Arg Met Leu Arg  
 115 120 125

Leu Ser Leu Asn Ile Asp Pro Asp Ala Lys Val Glu Glu Pro Glu  
 130 135 140

Glu Glu Pro Glu Glu Thr Ala Glu Asp Thr Thr Glu Asp Thr Glu Gln  
 145 150 155 160

Asp Glu Asp Glu Glu Met Asp Val Gly Thr Asp Glu Glu Glu Glu Thr  
 165 170 175

Ala Lys Glu Ser Thr Ala Glu Lys Asp Glu Leu  
 180 185

&lt;210&gt; 1399

&lt;211&gt; 376

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1399

Lys Ser Ser Thr Gly Val Ile Pro Asp Glu Ala Lys Ala Leu Ser Leu

1470

1	5	10	15
Leu Ala Pro Ala Asn Ala Val Ala Gly Leu Leu Pro Gly Gly Gly Leu	20	25	30
Leu Pro Thr Pro Asn Pro Leu Thr Gln Ile Gly Ala Val Pro Leu Ala	35	40	45
Ala Leu Gly Ala Pro Thr Leu Asp Pro Ala Leu Ala Ala Leu Gly Leu	50	55	60
Pro Gly Ala Asn Leu Asn Ser Gln Ser Leu Ala Ala Asp Gln Leu Leu	65	70	75
Lys Leu Met Ser Thr Val Asp Pro Lys Leu Asn His Val Ala Ala Gly	85	90	95
Leu Val Ser Pro Ser Leu Lys Ser Asp Thr Ser Ser Lys Glu Ile Glu	100	105	110
Glu Ala Met Lys Arg Val Arg Glu Ala Gln Ser Leu Ile Ser Ala Ala	115	120	125
Ile Glu Pro Asp Lys Lys Glu Glu Lys Arg Arg His Ser Arg Ser Arg	130	135	140
Ser Arg Ser Arg Arg Arg Arg Thr Pro Ser Ser Ser Arg His Arg Arg	145	150	155
Ser Arg Ser Arg Ser Arg Arg Arg Ser His Ser Lys Ser Arg Ser Arg	165	170	175
Arg Arg Ser Lys Ser Pro Arg Arg Arg Arg Ser His Ser Arg Glu Arg	180	185	190
Gly Arg Arg Ser Arg Ser Thr Ser Lys Thr Arg Asp Lys Lys Lys Glu	195	200	205
Asp Lys Glu Lys Lys Arg Ser Lys Thr Pro Pro Lys Ser Tyr Ser Thr	210	215	220
Ala Arg Arg Ser Arg Ser Ala Ser Arg Glu Arg Arg Arg Arg Arg Ser	225	230	235
Arg Ser Gly Thr Arg Ser Pro Lys Lys Pro Arg Ser Pro Lys Arg Lys	245	250	255
Leu Ser Arg Ser Pro Ser Pro Arg Arg His Lys Lys Glu Lys Lys Lys	260	265	270
Asp Lys Asp Lys Glu Arg Ser Arg Asp Glu Arg Glu Arg Ser Thr Ser			

1471

275	280	285
Lys Lys Lys Lys Ser Lys Asp Lys Glu Lys Asp Arg Glu Arg Lys Ser		
290	295	300
Glu Ser Asp Lys Asp Val Lys Gln Val Thr Arg Asp Tyr Asp Glu Glu		
305	310	315 320
Glu Gln Gly Tyr Asp Ser Glu Lys Glu Lys Lys Glu Glu Lys Lys Pro		
325	330	335
Ile Glu Thr Gly Ser Pro Lys Thr Lys Glu Cys Ser Val Glu Lys Gly		
340	345	350
Thr Gly Asp Ser Leu Arg Glu Ser Lys Val Asn Gly Asp Asp His His		
355	360	365
Glu Glu Asp Met Asp Met Ser Asp		
370	375	

&lt;210&gt; 1400

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1400

Thr Ala Gly Leu Thr Ser Arg Gly Trp Gly Ser Leu Pro Pro Ser Leu		
1	5	10 15
Glu Thr Phe Leu Xaa Trp Leu Lys Ser Arg Lys Glu Asn Glu Cys Thr		
20	25	30
Ser Arg Leu Ala Gln Ser Leu Ser Pro Ser Ser Ser Leu Phe Pro Ala		
35	40	45
Gly Pro Ser Gly Leu Tyr Gly Pro Asp Gly Gly Leu Arg Lys Met Arg		
50	55	60
Gly Leu Trp Phe Ser Gly Ile Pro Ala Gly Ala Thr Pro Ser Cys Leu		
65	70	75 80
Gln Met Val His Val Pro Ile Pro Pro Ser Arg Pro Leu Leu Cys Leu		
85	90	95

1472

Leu Cys His Arg Asp Ser Gln Gln Arg Phe Phe Phe Val Leu Ala Val  
100 105 110

&lt;210&gt; 1401

&lt;211&gt; 69

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1401

Arg Arg Gln Val Gly Ala Ala Ala Val Ala Met Thr Arg Gly Asn Gln  
1 5 10 15

Arg Glu Leu Ala Arg Gln Lys Asn Met Lys Lys Gln Ser Asp Ser Val  
20 25 30

Lys Gly Lys Arg Arg Asp Asp Gly Leu Ser Ala Ala Ala Arg Lys Gln  
35 40 45

Arg Asp Ser Glu Ile Met Gln Gln Lys Gln Lys Lys Ala Asn Glu Lys  
50 55 60

Lys Glu Glu Pro Lys  
65

&lt;210&gt; 1402

&lt;211&gt; 177

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (162)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (166)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1473

&lt;400&gt; 1402

Arg Pro Pro Arg Arg Xaa Pro Met Asp Gly Pro Ala Ile Ile Thr Gln  
 1 5 10 15  
 Val Thr Asn Pro Lys Glu Asp Glu Gly Arg Leu Pro Gly Ala Gly Glu  
 20 25 30  
 Lys Ala Ser Gln Cys Asn Val Ser Leu Lys Lys Gln Arg Ser Arg Ser  
 35 40 45  
 Ile Leu Ser Ser Phe Phe Cys Cys Phe Arg Asp Tyr Asn Val Glu Ala  
 50 55 60  
 Pro Pro Pro Ser Ser Pro Ser Val Leu Pro Pro Leu Val Glu Glu Asn  
 65 70 75 80  
 Gly Gly Leu Gln Lys Pro Pro Ala Lys Tyr Leu Leu Pro Glu Val Thr  
 85 90 95  
 Val Leu Asp Tyr Gly Lys Lys Cys Val Val Ile Asp Leu Asp Glu Thr  
 100 105 110  
 Leu Val His Ser Ser Phe Lys Pro Ile Ser Asn Ala Asp Phe Ile Val  
 115 120 125  
 Pro Val Glu Ile Asp Gly Thr Ile His Gln Val Tyr Val Leu Lys Arg  
 130 135 140  
 Pro His Val Asp Glu Phe Leu Gln Arg Met Gly Gln Leu Leu Asn Val  
 145 150 155 160  
 Cys Xaa Leu Leu Pro Xaa Gly Gln Val Cys Arg Pro Val Ala Asp Leu  
 165 170 175  
 Leu

&lt;210&gt; 1403

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1403

Lys His Ile Leu Ser Thr Phe Glu Thr Ser Val Leu Glu Gly Arg Leu  
 1 5 10 15  
 His Lys Leu Ser Ser Pro Arg Leu Arg Arg Leu Gln Ser Gly Lys Leu  
 20 25 30



1474

[illegible]

```
<210> 1404
<211> 251
<212> PRT
<213> Homo sapiens
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<220>
<221> SITE
<222> (37)
<223> Xaa equals any of the naturally occurring L-amino acids
```

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<220>  
<221> SITE  
<222> (41)  
<223> Xaa equals any of the naturally occurring L-amino acids
```

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<400> 1404
Thr Thr Lys Pro Ala Thr Thr Pro Ser Ser Thr Thr Arg Thr Cys Arg
  1                      5                      10                      15

Arg Ser Pro Ser Thr Leu Pro Ser Ala Thr Trp Thr Pro Leu Ala Ser
      20                      25                      30

Arg Thr Ala His Xaa Leu Pro Arg Xaa Tyr Met Tyr Pro Ser Met Asp
      35                      40                      45

Gln Leu Ala Glu Met Leu Pro Gly Val Leu Gln Gln Phe Gly Leu Lys
      50                      55                      60

Ser Ile Ile Gly Met Gly Thr Gly Ala Gly Ala Tyr Ile Leu Thr Arg
  65                      70                      75                      80

Phe Ala Leu Asn Asn Pro Glu Met Val Glu Gly Leu Val Leu Ile Asn
      85                      90                      95

Val Asn Pro Cys Ala Glu Gly Trp Met Asp Trp Ala Ala Ser Lys Ile
      100                      105                      110

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1475

Ser Gly Trp Thr Gln Ala Leu Pro Asp Met Val Val Ser His Leu Phe  
           115                          120                          125  
 Gly Lys Glu Glu Met Gln Ser Asn Val Glu Val Val His Thr Tyr Arg  
           130                          135                          140  
 Gln His Ile Val Asn Asp Met Asn Pro Gly Asn Leu His Leu Phe Ile  
  145                          150                          155                          160  
 Asn Ala Tyr Asn Ser Arg Arg Asp Leu Glu Ile Glu Arg Pro Met Pro  
                           165                          170                          175  
 Gly Thr His Thr Val Thr Leu Gln Cys Pro Ala Leu Leu Val Val Gly  
                           180                          185                          190  
 Asp Ser Ser Pro Ala Val Asp Ala Val Val Glu Cys Asn Ser Lys Leu  
           195                          200                          205  
 Asp Pro Thr Lys Thr Thr Leu Leu Lys Met Ala Asp Cys Gly Gly Leu  
           210                          215                          220  
 Pro Gln Ile Ser Gln Pro Ala Lys Leu Ala Glu Ala Phe Lys Tyr Phe  
  225                          230                          235                          240  
 Val Gln Gly Met Gly Tyr Met Pro Arg Leu Ala  
                           245                          250

&lt;210&gt; 1405

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1405

Phe Glu Gly Phe Tyr Ser Gly Arg Lys Asn Arg Thr Lys Val Tyr Val  
   1                          5                          10                          15  
 Pro Ser Ser Val Val Leu Ile Asp Leu Phe Phe Leu Phe Glu Thr Lys  
           20                          25                          30  
 Val Val Ser Val Phe Trp Phe Ser Gly Asn Met Tyr Tyr Ile Val Leu  
           35                          40                          45  
 Lys Glu Cys Cys Pro Thr Asn Tyr Ser Ser Lys Gln Arg Ile Val Thr  
           50                          55                          60  
 Ile Asn Lys Val Ser Val Thr Leu Leu Pro Leu Ser His Asn Ile His  
   65                          70                          75                          80  
 Cys Arg Ala Leu Cys Arg Ser Lys Asn Arg Ala Ala Gln Asn Leu Cys

1476

	85		90		95										
Gly	Ser	Phe	Leu	Ser	Phe	Cys	Asn	Leu	Arg	His	Met	Phe	Gln	Arg	Thr
	100							105					110		
Gly	Ile	Phe	Val	Trp	Ser	Ser	Asp	Leu	Gly	Asp	His	Ser	His	Asn	
	115						120					125			

&lt;210&gt; 1406

&lt;211&gt; 230

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (90)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (112)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (118)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (169)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (190)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (192)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (194)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1477

&lt;221&gt; SITE

&lt;222&gt; (217)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (218)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1406

Ala Glu Arg Pro Leu Gln Val Pro Arg Ser Ala Gly Glu Ala Ala Pro  
 1 5 10 15

His Ser Arg Arg Pro Pro Gly Leu Leu Pro His Ala Pro Arg Ala Ala  
 20 25 30

Ser Ala Gln Leu Glu Glu Arg Arg Arg Asp Pro His Pro Gly Met Thr  
 35 40 45

Leu Gln Glu Gly Asp Cys Arg Gly Ser Gln Thr Val Ser Leu Thr Met  
 50 55 60

Gly Thr Ala Asp Ser Asp Glu Met Ala Pro Glu Ala Pro Gln His Thr  
 65 70 75 80

His Ile Asp Val His Ile His Gln Glu Xaa Ala Leu Ala Lys Leu Leu  
 85 90 95

Leu Thr Cys Cys Ser Ala Leu Arg Pro Arg Ala Thr Gln Ala Arg Xaa  
 100 105 110

Ser Ser Arg Leu Leu Xaa Ala Ser Trp Val Met Gln Ile Val Leu Gly  
 115 120 125

Ile Leu Ser Ala Val Leu Gly Gly Phe Phe Tyr Ile Arg Asp Tyr Thr  
 130 135 140

Leu Leu Val Thr Ser Gly Ala Ala Ser Gly Gln Gly Leu Trp Leu Cys  
 145 150 155 160

Cys Trp Ser Cys Cys Leu His Leu Xaa Glu Thr Gly Trp Tyr Ile Leu  
 165 170 175

Gly Pro Ala Glu Asp Ser Ala Asn Ala Gly Lys Leu Ser Xaa Gln Xaa  
 180 185 190

Ser Xaa Ala Ser Asn Phe Gly Asn Glu Glu Phe Arg Tyr Gly Leu Leu  
 195 200 205

Leu Ile Thr Thr Ser Gly Trp Pro Xaa Xaa Gln Val Arg Val Asp Trp  
 210 215 220

1478

Asn Thr Ser Ser Pro Gln  
225 230

&lt;210&gt; 1407

&lt;211&gt; 79

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1407

Arg Gly His Phe Leu Leu Pro Asp Leu Asp Ile Pro Ser Asn Pro Ser  
1 5 10 15

Ser Tyr Ser Met Leu Lys Glu Lys Tyr Ser Gln Met His Tyr Val Asn  
20 25 30

Gly Glu Lys Lys His Ser Ile Val Glu Thr Pro Ile Leu Ala Asn Val  
35 40 45

Phe Trp Ser Val Phe His Phe Thr Val Tyr Ile Pro Ala Leu Lys Thr  
50 55 60

Gln Gly Gln Val Leu Thr Lys Glu Val Cys Ser His Ser Lys Tyr  
65 70 75

&lt;210&gt; 1408

&lt;211&gt; 289

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1408

Val Arg Pro Pro Ser His Val Thr Ala Asp Ser Gly Arg Ser Pro Leu  
1 5 10 15

Ser Leu Thr Tyr Leu Pro Leu Gln Glu Pro Gly Asp Met Ala Ala Ala  
20 25 30

Val Pro Arg Ala Ala Phe Leu Ser Pro Leu Leu Pro Leu Leu Leu Gly  
35 40 45

Phe Leu Leu Leu Ser Ala Pro His Gly Gly Ser Gly Leu His Thr Lys  
50 55 60

Gly Ala Leu Pro Leu Asp Thr Val Thr Phe Tyr Lys Val Ile Pro Lys  
65 70 75 80

Ser Lys Phe Val Leu Val Lys Phe Asp Thr Gln Tyr Pro Tyr Gly Glu

1479

				85				90				95			
Lys	Gln	Asp	Glu	Phe	Lys	Arg	Leu	Ala	Glu	Asn	Ser	Ala	Ser	Ser	Asp
100				105				110							
Asp	Leu	Leu	Val	Ala	Glu	Val	Gly	Ile	Ser	Asp	Tyr	Gly	Asp	Lys	Leu
115				120				125							
Asn	Met	Glu	Leu	Ser	Glu	Lys	Tyr	Lys	Leu	Asp	Lys	Glu	Ser	Tyr	Pro
130				135				140							
Val	Phe	Tyr	Leu	Phe	Arg	Asp	Gly	Asp	Phe	Glu	Asn	Pro	Val	Pro	Tyr
145				150				155				160			
Thr	Gly	Ala	Val	Lys	Val	Gly	Ala	Ile	Gln	Arg	Trp	Leu	Lys	Gly	Gln
165				170				175							
Gly	Val	Tyr	Leu	Gly	Met	Pro	Gly	Cys	Leu	Pro	Val	Tyr	Asp	Ala	Leu
180				185				190							
Ala	Gly	Glu	Phe	Ile	Arg	Ala	Ser	Gly	Val	Glu	Ala	Arg	Gln	Ala	Leu
195				200				205							
Leu	Lys	Gln	Gly	Gln	Asp	Asn	Leu	Ser	Ser	Val	Lys	Glu	Thr	Gln	Lys
210				215				220							
Lys	Trp	Ala	Glu	Gln	Tyr	Leu	Lys	Ile	Met	Gly	Lys	Ile	Leu	Asp	Gln
225				230				235				240			
Gly	Glu	Asp	Phe	Pro	Ala	Ser	Glu	Met	Thr	Arg	Ile	Ala	Arg	Leu	Ile
245				250				255							
Glu	Lys	Asn	Lys	Met	Ser	Asp	Gly	Lys	Lys	Glu	Glu	Leu	Gln	Lys	Ser
260				265				270							
Leu	Asn	Ile	Leu	Thr	Ala	Phe	Gln	Lys	Lys	Gly	Ala	Glu	Lys	Glu	Glu
275				280				285							
Leu															

<210> 1409

<211> 488

<212> PRT

<213> Homo sapiens

<400> 1409

Pro Ala Ser Ala Gly Thr Val Ser Glu Gly Pro Pro Gly Thr Asp Gly  
1 5 10 15

1480

Ser Ala Gly Arg Gly Gly Thr Ala Phe Ala Met Ala Ala Thr Val Asn  
 20 25 30

Leu Glu Leu Asp Pro Ile Phe Leu Lys Ala Leu Gly Phe Leu His Ser  
 35 40 45

Lys Ser Lys Asp Ser Ala Glu Lys Leu Lys Ala Leu Leu Asp Glu Ser  
 50 55 60

Leu Ala Arg Gly Ile Asp Ser Ser Tyr Arg Pro Ser Gln Lys Asp Val  
 65 70 75 80

Glu Pro Pro Lys Ile Ser Ser Thr Lys Asn Ile Ser Ile Lys Gln Glu  
 85 90 95

Pro Lys Ile Ser Ser Ser Leu Pro Ser Gly Asn Asn Asn Gly Lys Val  
 100 105 110

Leu Thr Thr Glu Lys Val Lys Lys Glu Ala Glu Lys Arg Pro Ala Asp  
 115 120 125

Lys Met Lys Ser Asp Ile Thr Glu Gly Val Asp Ile Pro Lys Lys Pro  
 130 135 140

Arg Leu Glu Lys Pro Glu Thr Gln Ser Ser Pro Ile Thr Val Gln Ser  
 145 150 155 160

Ser Lys Asp Leu Pro Met Ala Asp Leu Ser Ser Phe Glu Glu Thr Ser  
 165 170 175

Ala Asp Asp Phe Ala Met Glu Met Gly Leu Ala Cys Val Val Cys Arg  
 180 185 190

Gln Met Met Val Ala Ser Gly Asn Gln Leu Val Glu Cys Gln Glu Cys  
 195 200 205

His Asn Leu Tyr His Arg Asp Cys His Lys Pro Gln Val Thr Asp Lys  
 210 215 220

Glu Ala Asn Asp Pro Arg Leu Val Trp Tyr Cys Ala Arg Cys Thr Arg  
 225 230 235 240

Gln Met Lys Arg Met Ala Gln Lys Thr Gln Lys Pro Pro Gln Lys Pro  
 245 250 255

Ala Pro Ala Val Val Ser Val Thr Pro Ala Val Lys Asp Pro Leu Val  
 260 265 270

Lys Lys Pro Glu Thr Lys Leu Lys Gln Glu Thr Thr Phe Leu Ala Phe  
 275 280 285

1481

Lys Arg Thr Glu Val Lys Thr Ser Thr Val Ile Ser Gly Asn Ser Ser  
 290 295 300  
 Ser Ala Ser Val Ser Ser Ser Val Thr Ser Gly Leu Thr Gly Trp Ala  
 305 310 315 320  
 Ala Phe Ala Ala Lys Thr Ser Ser Ala Gly Pro Ser Thr Ala Lys Leu  
 325 330 335  
 Ser Ser Thr Thr Gln Asn Asn Thr Gly Lys Pro Ala Thr Ser Ser Ala  
 340 345 350  
 Asn Gln Lys Pro Val Gly Leu Thr Gly Leu Ala Thr Ser Ser Lys Gly  
 355 360 365  
 Gly Ile Gly Ser Lys Ile Gly Ser Asn Asn Ser Thr Thr Pro Thr Val  
 370 375 380  
 Pro Leu Lys Pro Pro Pro Pro Leu Thr Leu Gly Lys Thr Gly Leu Ser  
 385 390 395 400  
 Arg Ser Val Ser Cys Asp Asn Val Ser Lys Val Gly Leu Pro Ser Pro  
 405 410 415  
 Ser Ser Leu Val Pro Gly Ser Ser Ser Gln Leu Ser Gly Asn Gly Asn  
 420 425 430  
 Ser Gly Thr Ser Gly Pro Ser Gly Ser Thr Thr Ser Lys Thr Thr Ser  
 435 440 445  
 Glu Ser Ser Ser Ser Pro Ser Ala Ser Leu Lys Gly Pro Thr Ser Gln  
 450 455 460  
 Glu Ser Gln Leu Asn Ala Met Lys Arg Leu Gln Met Val Lys Lys Lys  
 465 470 475 480  
 Ala Ala Gln Lys Lys Leu Lys Lys  
 485

&lt;210&gt; 1410

&lt;211&gt; 64

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids



1482

&lt;400&gt; 1410

His Tyr Gly Leu Lys Leu Ala Val Lys Met Pro Asn Thr Val Val Pro  
 1 5 10 15

Trp Asn Pro Val Tyr Ser Cys Ala Lys Gln Asn Cys Lys Ile Val Lys  
 20 25 30

Met Ser Tyr Gln Val Ile Arg Arg Leu Gln Arg His His Leu Phe Phe  
 35 40 45

Ile Ser Phe Phe Xaa Leu Thr His Val Val Val Ile Phe Asn Thr Phe  
 50 55 60

&lt;210&gt; 1411

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1411

Ala Ala Cys Leu Ala Leu Arg Ile Ala Ala Ala Met Ala Ser Gln Ser  
 1 5 10 15

Gln Gly Ile Gln Gln Leu Leu Gln Ala Glu Lys Arg Ala Ala Glu Lys  
 20 25 30

Val Ser Glu Ala Arg Lys Arg Lys Asn Arg Arg Leu Lys Gln Ala Lys  
 35 40 45

Glu Glu Ala Gln Ala Glu Ile Glu Gln Tyr Arg Leu Gln Arg Glu Lys  
 50 55 60

Glu Phe Lys Ala Lys Glu Ala Ala Ala Leu Gly Ser Arg Gly Ser Cys  
 65 70 75 80

Ser Thr Glu Val Glu Lys Glu Thr Gln Glu Lys Met Thr Ile Leu Gln  
 85 90 95

Thr Tyr Phe Arg Gln Asn Arg Asp Glu Val Leu Asp Asn Leu Leu Ala  
 100 105 110

Phe Val Cys Asp Ile Arg Pro Glu Ile His Glu Asn Tyr Arg Ile Asn  
 115 120 125

Gly

1483

&lt;210&gt; 1412

&lt;211&gt; 177

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1412

Val Thr Val Pro Ser Ser Ser Ala Ala Gly Thr Leu Phe Gln Gly Leu  
 1 5 10 15

Cys Gly Ala Pro Asp Ala Pro His Pro Leu Ser Lys Ile Pro Gly Gly  
 20 25 30

Arg Gly Gly Gly Arg Asp Pro Ser Leu Ser Ala Leu Ile Tyr Lys Asp  
 35 40 45

Glu Lys Leu Thr Val Thr Gln Asp Leu Pro Val Asn Asp Gly Lys Pro  
 50 55 60

His Ile Val His Phe Gln Tyr Glu Val Thr Glu Val Lys Val Ser Ser  
 65 70 75 80

Trp Asp Ala Val Leu Ser Ser Gln Ser Leu Phe Val Glu Ile Pro Asp  
 85 90 95

Gly Leu Leu Ala Asp Gly Ser Lys Glu Gly Leu Leu Ala Leu Leu Glu  
 100 105 110

Phe Ala Glu Glu Lys Met Lys Val Asn Tyr Val Phe Ile Cys Phe Arg  
 115 120 125

Lys Gly Arg Glu Asp Arg Ala Pro Leu Leu Lys Thr Phe Ser Phe Leu  
 130 135 140

Gly Phe Glu Ile Val Arg Pro Gly His Pro Cys Val Pro Ser Arg Pro  
 145 150 155 160

Asp Val Met Phe Met Val Tyr Pro Leu Asp Gln Asn Leu Ser Asp Glu  
 165 170 175

Asp

&lt;210&gt; 1413

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1484

&lt;400&gt; 1413

Ser Gly Leu Arg Leu Ala Met Ser Thr Asn Asn Met Ser Asp Pro Arg  
 1 5 10 15

Arg Pro Asn Lys Val Leu Arg Tyr Lys Pro Pro Pro Ser Glu Cys Asn  
 20 25 30

Pro Ala Leu Asp Asp Pro Thr Pro Asp Tyr Met Asn Leu Leu Gly Met  
 35 40 45

Ile Phe Ser Met Cys Gly Leu Met Leu Lys Leu Lys Trp Cys Ala Trp  
 50 55 60

Val Ala Val Tyr Cys Ser Phe Ile Ser Phe Ala Asn Ser Arg Ser Ser  
 65 70 75 80

Glu Asp Thr Lys Gln Met Met Ser Ser Phe Met Leu Ser Ile Ser Ala  
 85 90 95

Val Val Met Ser Tyr Leu Gln Asn Pro Gln Pro Met Thr Pro Pro Trp  
 100 105 110

&lt;210&gt; 1414

&lt;211&gt; 186

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1414

Cys Leu Gly Gly Arg Pro Arg Cys Val Leu Arg Leu Thr Ala Asn Leu  
 1 5 10 15

Glu Gly Arg Arg Asp Ser Ala Thr His Ala Pro Pro His Pro Arg Leu  
 20 25 30

Arg Val Lys Arg Ala Val Gly Pro Glu Ser Pro Pro Leu Trp Gln Trp  
 35 40 45

Pro Pro Leu Tyr Ser Ile Leu Pro Ser Gly Arg Ser Ala Val Asn Lys  
 50 55 60

Arg Trp Ala Pro Gln Ser Thr Cys Pro Pro Thr Ala Leu Ala Val Leu  
 65 70 75 80

Gly Ser Ser Leu Gln Phe Thr Gly Asn Lys Pro Glu Ser Ala Arg Thr  
 85 90 95

1485

Arg Gly Cys Ser Pro Gly Ser Ala Arg Pro Pro Leu Ser Pro Ala Thr  
                   100                                  105                                  110  
 Gly Trp Arg Cys Arg Ala Arg Ala Ala Ala Ser Arg Arg Phe Pro Gly  
                   115                                  120                                  125  
 Ala Pro Gly Pro Glu Glu Arg Ser Pro Gln Ser Lys Gly Gly Asn Thr  
                   130                                  135                                  140  
 Cys Leu Arg Cys Lys Glu Ile Leu Phe Gln Ser Ile Pro Val Val Gln  
                   145                                  150                                  155                                  160  
 Thr Asp Thr Val Pro Asn Glu Arg Ser Asp Val Phe Ser Ser Pro Phe  
                                   165                                  170                                  175  
 Leu Ile Cys Phe Leu Thr Gly Leu Arg Phe  
                                   180                                  185

&lt;210&gt; 1415

&lt;211&gt; 108

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (46)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (68)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1415

Thr Lys Thr Thr Leu Phe Leu Glu Arg Pro Leu Phe Lys Lys Glu Ser  
   1                                  5                                  10                                  15  
 Ile Thr Pro Thr Val Glu Leu Asn Ala Leu Cys Met Lys Leu Gly Lys  
                   20                                  25                                  30  
 Lys Pro Met Tyr Lys Pro Val Asp Pro Tyr Ser Arg Met Xaa Ser Thr  
                   35                                  40                                  45  
 Tyr Asn Tyr Asn Met Arg Gly Gly Ala Tyr Pro Pro Arg Tyr Phe Tyr  
                   50                                  55                                  60  
 Pro Phe Pro Xaa Pro Pro Leu Leu Tyr Gln Val Glu Leu Ser Val Gly  
                   65                                  70                                  75                                  80

1486

Gly Gln Gln Phe Asn Gly Lys Gly Lys Thr Arg Gln Ala Ala Lys His  
                     85                    90                    95

Asp Ala Ala Ala Lys Ala Val Glu Asp Pro Ala Glu  
                     100                    105

&lt;210&gt; 1416

&lt;211&gt; 621

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1416

Ala Gly His Arg Ala Gly Val Cys Ser Leu Ser Ala Thr Arg Leu Leu  
   1                    5                    10                    15

Leu Pro Lys Asp Arg Gly Val Gly Arg Arg Gln Thr Met Trp Thr Leu  
                     20                    25                    30

Val Ser Trp Val Ala Leu Thr Ala Gly Leu Val Ala Gly Thr Arg Cys  
                     35                    40                    45

Pro Asp Gly Gln Phe Cys Pro Val Ala Cys Cys Leu Asp Pro Gly Gly  
                     50                    55                    60

Ala Ser Tyr Ser Cys Cys Arg Pro Leu Leu Asp Lys Trp Pro Thr Thr  
   65                    70                    75                    80

Leu Ser Arg His Leu Gly Gly Pro Cys Gln Val Asp Ala His Cys Ser  
                     85                    90                    95

Ala Gly His Ser Cys Ile Phe Thr Val Ser Gly Thr Ser Ser Cys Cys  
                     100                    105                    110

Pro Phe Pro Glu Ala Val Ala Cys Gly Asp Gly His His Cys Cys Pro  
                     115                    120                    125

Arg Gly Phe His Cys Ser Ala Asp Gly Arg Ser Cys Phe Gln Arg Ser  
                     130                    135                    140

Gly Asn Asn Ser Val Gly Ala Ile Gln Cys Pro Asp Ser Gln Phe Glu  
  145                    150                    155                    160

Cys Pro Asp Phe Ser Thr Cys Cys Val Met Val Asp Gly Ser Trp Gly  
                     165                    170                    175

Cys Cys Pro Met Pro Gln Ala Ser Cys Cys Glu Asp Arg Val His Cys  
                     180                    185                    190

1487

Cys Pro His Gly Ala Phe Cys Asp Leu Val His Thr Arg Cys Ile Thr  
 195 200 205  
 Pro Thr Gly Thr His Pro Leu Ala Lys Lys Leu Pro Ala Gln Arg Thr  
 210 215 220  
 Asn Arg Ala Val Ala Leu Ser Ser Ser Val Met Cys Pro Asp Ala Arg  
 225 230 235 240  
 Ser Arg Cys Pro Asp Gly Ser Thr Cys Cys Glu Leu Pro Ser Gly Lys  
 245 250 255  
 Tyr Gly Cys Cys Pro Met Pro Asn Ala Thr Cys Cys Ser Asp His Leu  
 260 265 270  
 His Cys Cys Pro Gln Asp Thr Val Cys Asp Leu Ile Gln Ser Lys Cys  
 275 280 285  
 Leu Ser Lys Glu Asn Ala Thr Thr Asp Leu Leu Thr Lys Leu Pro Ala  
 290 295 300  
 His Thr Val Gly Asp Val Lys Cys Asp Met Glu Val Ser Cys Pro Asp  
 305 310 315 320  
 Gly Tyr Thr Cys Cys Arg Leu Gln Ser Gly Ala Trp Gly Cys Cys Pro  
 325 330 335  
 Phe Thr Gln Ala Val Cys Cys Glu Asp His Ile His Cys Cys Pro Ala  
 340 345 350  
 Gly Phe Thr Cys Asp Thr Gln Lys Gly Thr Cys Glu Gln Gly Pro His  
 355 360 365  
 Gln Val Pro Trp Met Glu Lys Ala Pro Ala His Leu Ser Leu Pro Asp  
 370 375 380  
 Pro Gln Ala Leu Lys Arg Asp Val Pro Cys Asp Asn Val Ser Ser Cys  
 385 390 395 400  
 Pro Ser Ser Asp Thr Cys Cys Gln Leu Thr Ser Gly Glu Trp Gly Cys  
 405 410 415  
 Cys Pro Ile Pro Glu Ala Val Cys Cys Ser Asp His Gln His Cys Cys  
 420 425 430  
 Pro Gln Gly Tyr Thr Cys Val Ala Glu Gly Gln Cys Gln Arg Gly Ser  
 435 440 445  
 Glu Ile Val Ala Gly Leu Glu Lys Met Pro Ala Arg Arg Ala Ser Leu  
 450 455 460

1488

Ser His Pro Arg Asp Ile Gly Cys Asp Gln His Thr Ser Cys Pro Val  
 465 470 475 480  
 Gly Gln Thr Cys Cys Pro Ser Leu Gly Gly Ser Trp Ala Cys Cys Gln  
 485 490 495  
 Leu Pro His Ala Val Cys Cys Glu Asp Arg Gln His Cys Cys Pro Ala  
 500 505 510  
 Gly Tyr Thr Cys Asn Val Lys Ala Arg Ser Cys Glu Lys Glu Val Val  
 515 520 525  
 Ser Ala Gln Pro Ala Thr Phe Leu Ala Arg Ser Pro His Val Gly Val  
 530 535 540  
 Lys Asp Val Glu Cys Gly Glu Gly His Phe Cys His Asp Asn Gln Thr  
 545 550 555 560  
 Cys Cys Arg Asp Asn Arg Gln Gly Trp Ala Cys Cys Pro Tyr Arg Gln  
 565 570 575  
 Gly Val Cys Cys Ala Asp Arg Arg His Cys Cys Pro Ala Gly Phe Arg  
 580 585 590  
 Cys Ala Ala Arg Gly Thr Lys Cys Leu Arg Arg Glu Ala Pro Arg Trp  
 595 600 605  
 Asp Ala Pro Leu Arg Asp Pro Ala Leu Arg Gln Leu Leu  
 610 615 620

&lt;210&gt; 1417

&lt;211&gt; 340

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1417

Ser Ala His Ala Ser Glu Arg Ile Ala Xaa Ser Gly Cys Gly Ala Pro  
 1 5 10 15

1489

Ala Ala Gly Ala Gly Pro Arg Xaa Arg Ser Leu Gly Ala Asp Pro Gly  
                   20                                  25                                  30

Arg Ala Ala Arg Arg His Glu Gly Gln Gly Gly Glu Gly Gly Arg Arg  
                   35                                  40                                  45

Thr Ala Gly Arg Trp Arg Arg Lys Pro Glu Lys Ser Pro Ser Ala Gln  
                   50                                  55                                  60

Glu Leu Lys Glu Gln Gly Asn Arg Leu Phe Val Gly Arg Lys Tyr Pro  
                   65                                  70                                  75                                  80

Glu Ala Ala Ala Cys Tyr Gly Arg Ala Ile Thr Arg Asn Pro Leu Val  
                                   85                                  90                                  95

Ala Val Tyr Tyr Thr Asn Arg Ala Leu Cys Tyr Leu Lys Met Gln Gln  
                   100                                  105                                  110

His Glu Gln Ala Leu Ala Asp Cys Arg Arg Ala Leu Glu Leu Asp Gly  
                   115                                  120                                  125

Gln Ser Val Lys Ala His Phe Phe Leu Gly Gln Cys Gln Leu Glu Met  
                   130                                  135                                  140

Glu Ser Tyr Asp Glu Ala Ile Ala Asn Leu Gln Arg Ala Tyr Ser Leu  
                   145                                  150                                  155                                  160

Ala Lys Glu Gln Arg Leu Asn Phe Gly Asp Asp Ile Pro Ser Ala Leu  
                                   165                                  170                                  175

Arg Ile Ala Lys Lys Lys Arg Trp Asn Ser Ile Glu Glu Arg Arg Ile  
                   180                                  185                                  190

His Gln Glu Ser Glu Leu His Ser Tyr Leu Ser Arg Leu Ile Ala Ala  
                   195                                  200                                  205

Glu Arg Glu Arg Glu Leu Glu Glu Cys Gln Arg Asn His Glu Gly Asp  
                   210                                  215                                  220

Glu Asp Asp Ser His Val Arg Ala Gln Gln Ala Cys Ile Glu Ala Lys  
                   225                                  230                                  235                                  240

His Asp Lys Tyr Met Ala Asp Met Asp Glu Leu Phe Ser Gln Val Asp  
                                   245                                  250                                  255

Glu Lys Arg Lys Lys Arg Asp Ile Pro Asp Tyr Leu Cys Gly Lys Ile  
                   260                                  265                                  270

Ser Phe Glu Leu Met Arg Glu Pro Cys Ile Thr Pro Ser Gly Ile Thr  
                   275                                  280                                  285



1490

Tyr Asp Arg Lys Asp Ile Glu Glu His Leu Gln Arg Val Gly His Phe  
 290 295 300  
 Asp Pro Val Thr Arg Ser Pro Leu Thr Gln Glu Gln Leu Ile Pro Asn  
 305 310 315 320  
 Leu Ala Met Lys Glu Val Ile Asp Ala Phe Ile Ser Glu Asn Gly Trp  
 325 330 335  
 Val Glu Asp Tyr  
 340

<210> 1418  
 <211> 235  
 <212> PRT  
 <213> Homo sapiens

<400> 1418  
 Ser Pro Arg Pro Leu Arg Phe Cys Gly Gly Ala Arg Ala Arg Arg Pro  
 1 5 10 15  
 Leu Ser Ala Val Ala Arg Pro Ala Arg Ser Ser Asp Pro Leu Arg Ser  
 20 25 30  
 Ala Pro Leu Gly Pro Ala Pro Pro Val Asn Met Ile Arg Cys Gly Leu  
 35 40 45  
 Ala Cys Glu Arg Cys Arg Trp Ile Leu Pro Leu Leu Leu Ser Ala  
 50 55 60  
 Ile Ala Phe Asp Ile Ile Ala Leu Ala Gly Arg Gly Trp Leu Gln Ser  
 65 70 75 80  
 Ser Asp His Gly Gln Thr Ser Ser Leu Trp Trp Lys Cys Ser Gln Glu  
 85 90 95  
 Gly Gly Gly Ser Gly Ser Tyr Glu Glu Gly Cys Gln Ser Leu Met Glu  
 100 105 110  
 Tyr Ala Trp Gly Arg Ala Ala Ala Ala Met Leu Phe Cys Gly Phe Ile  
 115 120 125  
 Ile Leu Val Ile Cys Phe Ile Leu Ser Phe Phe Ala Leu Cys Gly Pro  
 130 135 140  
 Gln Met Leu Val Phe Leu Arg Val Ile Gly Gly Leu Leu Ala Leu Ala  
 145 150 155 160  
 Ala Val Phe Gln Ile Ile Ser Leu Val Ile Tyr Pro Val Lys Tyr Thr

1491

	165		170		175
Gln Thr Phe Thr Leu His Ala Asn Arg Ala Val Thr Tyr Ile Tyr Asn					
	180		185		190
Trp Ala Tyr Gly Phe Gly Trp Ala Ala Thr Ile Ile Leu Ile Gly Cys					
	195		200		205
Ala Phe Phe Phe Cys Cys Leu Pro Asn Tyr Glu Asp Asp Leu Leu Gly					
	210		215		220
Asn Ala Lys Pro Arg Tyr Phe Tyr Thr Ser Ala					
	225		230		235

&lt;210&gt; 1419

&lt;211&gt; 86

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1419

Arg Arg Gln Ala Leu Gln Glu Arg Cys Pro Phe Asn Pro Leu Ser Ala					
1	5		10		15
Leu Asp Arg Arg Cys Cys Val Lys Leu Leu Met Asp Ile Tyr Met Arg					
	20		25		30
Ser Ser Phe Leu Tyr Ala Ile Pro Ala Val Phe Phe Phe Leu Thr Gly					
	35		40		45
Pro Cys Leu Arg Ile Asn Lys Ser Val Met Ser Glu Thr Lys Val Tyr					
	50		55		60
Ser Ser Val Cys Arg Cys Val Ala Pro Pro Phe Ser Pro Ala Ala Pro					
	65		70		75
					80
His Ile Gln Ser Arg Ser					
					85

&lt;210&gt; 1420

&lt;211&gt; 351

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1420

Thr Trp Cys Thr Thr Met Leu Ala Ala Arg Leu Val Cys Leu Arg				
1	5		10	15

1492

Thr Leu Pro Ser Arg Val Phe His Pro Ala Phe Thr Lys Ala Ser Pro  
 20 25 30  
 Val Val Lys Asn Ser Ile Thr Lys Asn Gln Trp Leu Leu Thr Pro Ser  
 35 40 45  
 Arg Glu Tyr Ala Thr Lys Thr Arg Ile Gly Ile Arg Arg Gly Arg Thr  
 50 55 60  
 Gly Gln Glu Leu Lys Glu Ala Ala Leu Glu Pro Ser Met Glu Lys Ile  
 65 70 75 80  
 Phe Lys Ile Asp Gln Met Gly Arg Trp Phe Val Ala Gly Gly Ala Ala  
 85 90 95  
 Val Gly Leu Gly Ala Leu Cys Tyr Tyr Gly Leu Gly Leu Ser Asn Glu  
 100 105 110  
 Ile Gly Ala Ile Glu Lys Ala Val Ile Trp Pro Gln Tyr Val Lys Asp  
 115 120 125  
 Arg Ile His Ser Thr Tyr Met Tyr Leu Ala Gly Ser Ile Gly Leu Thr  
 130 135 140  
 Ala Leu Ser Ala Ile Ala Ile Ser Arg Thr Pro Val Leu Met Asn Phe  
 145 150 155 160  
 Met Met Arg Gly Ser Trp Val Thr Ile Gly Val Thr Phe Ala Ala Met  
 165 170 175  
 Val Gly Ala Gly Met Leu Val Arg Ser Ile Pro Tyr Asp Gln Ser Pro  
 180 185 190  
 Gly Pro Lys His Leu Ala Trp Leu Leu His Ser Gly Val Met Gly Ala  
 195 200 205  
 Val Val Ala Pro Leu Thr Ile Leu Gly Gly Pro Leu Leu Ile Arg Ala  
 210 215 220  
 Ala Trp Tyr Thr Ala Gly Ile Val Gly Gly Leu Ser Thr Val Ala Met  
 225 230 235 240  
 Cys Ala Pro Ser Glu Lys Phe Leu Asn Met Gly Ala Pro Leu Gly Val  
 245 250 255  
 Gly Leu Gly Leu Val Phe Val Ser Ser Leu Gly Ser Met Phe Leu Pro  
 260 265 270  
 Pro Thr Thr Val Ala Gly Ala Thr Leu Tyr Ser Val Ala Met Tyr Gly  
 275 280 285

1493

Gly Leu Val Leu Phe Ser Met Phe Leu Leu Tyr Asp Thr Gln Lys Val  
 290 295 300

Ile Lys Arg Ala Glu Val Ser Pro Met Tyr Gly Val Gln Lys Tyr Asp  
 305 310 315 320

Pro Ile Asn Ser Met Leu Ser Ile Tyr Met Asp Thr Leu Asn Ile Phe  
 325 330 335

Met Arg Val Ala Thr Met Leu Ala Thr Gly Gly Asn Arg Lys Lys  
 340 345 350

&lt;210&gt; 1421

&lt;211&gt; 81

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1421

Cys Gly Xaa Leu Leu Met Ala Gln Gly Leu Ser Ala Ser Ala Leu Glu  
 1 5 10 15

Gly Leu Lys Thr Glu Glu Gly Ser Val Arg Gly Ala Leu Pro Ala Val  
 20 25 30

Ser Ser Pro Pro Ala Pro Val Ser Pro Ser Ser Pro Thr Thr His Asn  
 35 40 45

Gly Glu Leu Glu Pro Ser Phe Ser Pro Leu Leu Gly Glu Gly Lys Thr  
 50 55 60

Pro Glu Thr Leu Leu Pro Gln Lys Cys Trp Gly Gln Gly Gly Pro Gly  
 65 70 75 80

Arg

&lt;210&gt; 1422

&lt;211&gt; 484

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1422

1494

Ala	Cys	Arg	Ser	Thr	Leu	Val	Asp	Pro	Lys	Asn	Ser	Ala	Gln	Glu	Arg	1	5	10	15
Arg	Ala	Leu	Gly	Pro	Leu	Pro	Pro	Cys	Ser	Phe	Ala	Leu	Gln	Leu	Gly	20	25	30	
Met	Ala	Gly	Tyr	Leu	Arg	Val	Val	Arg	Ser	Leu	Cys	Arg	Ala	Ser	Gly	35	40	45	
Ser	Arg	Pro	Ala	Trp	Ala	Pro	Ala	Ala	Leu	Thr	Ala	Pro	Thr	Ser	Gln	50	55	60	
Glu	Gln	Pro	Arg	Arg	His	Tyr	Ala	Asp	Lys	Arg	Ile	Lys	Val	Ala	Lys	65	70	75	80
Pro	Val	Val	Glu	Met	Asp	Gly	Asp	Glu	Met	Thr	Arg	Ile	Ile	Trp	Gln	85	90	95	
Phe	Ile	Lys	Glu	Lys	Leu	Ile	Leu	Pro	His	Val	Asp	Ile	Gln	Leu	Lys	100	105	110	
Tyr	Phe	Asp	Leu	Gly	Leu	Pro	Asn	Arg	Asp	Gln	Thr	Asp	Asp	Gln	Val	115	120	125	
Thr	Ile	Asp	Ser	Ala	Leu	Ala	Thr	Gln	Lys	Tyr	Ser	Val	Ala	Val	Lys	130	135	140	
Cys	Ala	Thr	Ile	Thr	Pro	Asp	Glu	Ala	Arg	Val	Glu	Glu	Phe	Lys	Leu	145	150	155	160
Lys	Lys	Met	Trp	Lys	Ser	Pro	Asn	Gly	Thr	Ile	Arg	Asn	Ile	Leu	Gly	165	170	175	
Gly	Thr	Val	Phe	Arg	Glu	Pro	Ile	Ile	Cys	Lys	Asn	Ile	Pro	Arg	Leu	180	185	190	
Val	Pro	Gly	Trp	Thr	Lys	Pro	Ile	Thr	Ile	Gly	Arg	His	Ala	His	Gly	195	200	205	
Asp	Gln	Tyr	Lys	Ala	Thr	Asp	Phe	Val	Ala	Asp	Arg	Ala	Gly	Thr	Phe	210	215	220	
Lys	Met	Val	Phe	Thr	Pro	Lys	Asp	Gly	Ser	Gly	Val	Lys	Glu	Trp	Glu	225	230	235	240
Val	Tyr	Asn	Phe	Pro	Ala	Gly	Gly	Val	Gly	Met	Gly	Met	Tyr	Asn	Thr	245	250	255	
Asp	Glu	Ser	Ile	Ser	Gly	Phe	Ala	His	Ser	Cys	Phe	Gln	Tyr	Ala	Ile	260	265	270	

1495

Gln Lys Lys Trp Pro Leu Tyr Met Ser Thr Lys Asn Thr Ile Leu Lys  
           275                                  280                                  285  
 Ala Tyr Asp Gly Arg Phe Lys Asp Ile Phe Gln Glu Ile Phe Asp Lys  
           290                                  295                                  300  
 His Tyr Lys Thr Asp Phe Asp Lys Asn Lys Ile Trp Tyr Glu His Arg  
 305                                  310                                  315                                  320  
 Leu Ile Asp Asp Met Val Ala Gln Val Leu Lys Ser Ser Gly Gly Phe  
                                   325                                  330                                  335  
 Val Trp Ala Cys Lys Asn Tyr Asp Gly Asp Val Gln Ser Asp Ile Leu  
                                   340                                  345                                  350  
 Ala Gln Gly Phe Gly Ser Leu Gly Leu Met Thr Ser Val Leu Val Cys  
                                   355                                  360                                  365  
 Pro Asp Gly Lys Thr Ile Glu Ala Glu Ala Ala His Gly Thr Val Thr  
           370                                  375                                  380  
 Arg His Tyr Arg Glu His Gln Lys Gly Arg Pro Thr Ser Thr Asn Pro  
 385                                  390                                  395                                  400  
 Ile Ala Ser Ile Phe Ala Trp Thr Arg Gly Leu Glu His Arg Gly Lys  
                                   405                                  410                                  415  
 Leu Asp Gly Asn Gln Asp Leu Ile Arg Phe Ala Gln Met Leu Glu Lys  
                                   420                                  425                                  430  
 Val Cys Val Glu Thr Val Glu Ser Gly Ala Met Thr Lys Asp Leu Ala  
                                   435                                  440                                  445  
 Gly Cys Ile His Gly Leu Ser Asn Val Lys Leu Asn Glu His Phe Leu  
           450                                  455                                  460  
 Asn Thr Thr Asp Phe Leu Asp Thr Ile Lys Ser Asn Leu Asp Arg Ala  
 465                                  470                                  475                                  480  
 Leu Gly Arg Gln

&lt;210&gt; 1423

&lt;211&gt; 240

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1496

&lt;222&gt; (153)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1423

Val Arg Ile Pro Gly Ser Thr His Ala Ser Gly Gly Gly Asp Gly Asp  
 1 5 10 15

Met Glu Ser Gly Ala Tyr Gly Ala Ala Lys Ala Gly Gly Ser Phe Asp  
 20 25 30

Leu Arg Arg Phe Leu Thr Gln Pro Gln Val Val Ala Arg Ala Val Cys  
 35 40 45

Leu Val Phe Ala Leu Ile Val Phe Ser Cys Ile Tyr Gly Glu Gly Tyr  
 50 55 60

Ser Asn Ala His Glu Ser Lys Gln Met Tyr Cys Val Phe Asn Arg Asn  
 65 70 75 80

Glu Asp Ala Cys Arg Tyr Gly Ser Ala Ile Gly Val Leu Ala Phe Leu  
 85 90 95

Ala Ser Ala Phe Phe Leu Val Val Asp Ala Tyr Phe Pro Gln Ile Ser  
 100 105 110

Asn Ala Thr Asp Arg Lys Tyr Leu Val Ile Gly Asp Leu Leu Phe Ser  
 115 120 125

Ala Leu Trp Thr Phe Leu Trp Phe Val Gly Phe Cys Phe Leu Thr Asn  
 130 135 140

Gln Trp Ala Val Thr Asn Pro Lys Xaa Val Leu Val Gly Ala Asp Ser  
 145 150 155 160

Val Arg Ala Ala Ile Thr Phe Ser Phe Phe Ser Ile Phe Ser Trp Gly  
 165 170 175

Val Leu Ala Ser Leu Ala Tyr Gln Arg Tyr Lys Ala Gly Val Asp Asp  
 180 185 190

Phe Ile Gln Asn Tyr Val Asp Pro Thr Pro Asp Pro Asn Thr Ala Tyr  
 195 200 205

Ala Ser Tyr Pro Gly Ala Ser Val Asp Asn Tyr Gln Gln Pro Pro Phe  
 210 215 220

Thr Gln Asn Ala Glu Thr Thr Glu Gly Tyr Gln Pro Pro Pro Val Tyr  
 225 230 235 240

1497

<210> 1424  
 <211> 244  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (59)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (62)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (221)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1424  
 Arg Val Arg Arg Gln Ser Ser Gly Asn Leu Thr Met Ala Trp Thr Pro  
   1                  5                  10                  15  
 Leu Leu Leu Pro Leu Leu Thr Phe Cys Thr Val Ser Glu Ala Ser Tyr  
                   20                  25                  30  
 Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ser Pro Gly Gln Thr Ala  
           35                  40                  45  
 Arg Ile Thr Cys Ser Gly Asp Ala Leu Pro Xaa Lys Tyr Xaa Tyr Trp  
   50                  55                  60  
 Tyr Gln Gln Lys Ser Gly Gln Ala Pro Val Leu Val Ile Tyr Glu Asp  
   65                  70                  75                  80  
 Thr Arg Arg Pro Ser Ala Ile Pro Glu Arg Phe Ser Ala Ser Ser Ser  
                   85                  90                  95  
 Gly Thr Met Ala Thr Leu Thr Ile Ser Gly Ala Gln Val Glu Asp Glu  
           100                  105                  110  
 Ala Asp Tyr Tyr Cys Tyr Ser Thr Asp Ser Ser Ser Tyr Tyr Arg Val  
   115                  120                  125  
 Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala  
   130                  135                  140



1498

Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala Asn  
 145 150 155 160

Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly Ala Val  
 165 170 175

Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val Glu  
 180 185 190

Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser Ser  
 195 200 205

Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser His Xaa Ser Tyr Ser  
 210 215 220

Cys Gln Val Thr His Glu Gly Ser Thr Val Glu Lys Thr Val Ala Pro  
 225 230 235 240

Thr Glu Cys Ser

<210> 1425

<211> 173

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (1)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (115)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (136)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (137)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (159)

1499

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1425

Xaa Val Arg Val Gln Thr Arg Gly Ser Ala Asp Pro Ala Gln Leu Arg  
 1 5 10 15

Arg His Pro Gly Tyr Lys Arg Thr Ala Ser Ala Thr Leu Ser Asp Pro  
 20 25 30

Ala Ala Ala Ala Met Gln Pro Ser Ser Leu Leu Pro Leu Ala Leu Cys  
 35 40 45

Leu Leu Ala Ala Pro Ala Ser Ala Leu Val Arg Ile Pro Leu His Lys  
 50 55 60

Phe Thr Ser Ile Arg Arg Thr Met Ser Glu Val Gly Gly Ser Val Glu  
 65 70 75 80

Asp Leu Ile Ala Lys Gly Pro Val Ser Lys Tyr Ser Gln Ala Val Pro  
 85 90 95

Ala Val Thr Glu Gly Pro Ile Pro Glu Val Leu Lys Asn Tyr Met Asp  
 100 105 110

Ala Gln Xaa Tyr Gly Glu Ile Gly Ile Gly Thr Pro Pro Gln Cys Phe  
 115 120 125

Thr Val Val Phe Asp Thr Gly Xaa Xaa Asn Leu Trp Val Pro Ser Ile  
 130 135 140

His Cys Lys Leu Leu Asp Ile Ala Cys Trp Ile His His Lys Xaa Asn  
 145 150 155 160

Ser Asp Lys Ser Ser Asn Tyr Val Lys Asn Gly Asn Ser  
 165 170

&lt;210&gt; 1426

&lt;211&gt; 351

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1426

Ile Arg His Glu Ile Leu Trp Leu Leu Cys Ser His Arg Pro Ala Pro  
 1 5 10 15

1500

Gly Arg Pro Pro Thr His Asn Ala His Asn Trp Arg Leu Gly Gln Ala  
 20 25 30  
 Pro Ala Xaa Trp Tyr Asn Asp Thr Tyr Pro Leu Ser Pro Pro Gln Arg  
 35 40 45  
 Thr Pro Ala Gly Ile Arg Tyr Arg Ile Ala Val Ile Ala Asp Leu Asp  
 50 55 60  
 Thr Glu Ser Arg Ala Gln Glu Glu Asn Thr Trp Phe Ser Tyr Leu Lys  
 65 70 75 80  
 Lys Gly Tyr Leu Thr Leu Ser Asp Ser Gly Asp Lys Val Ala Val Glu  
 85 90 95  
 Trp Asp Lys Asp His Gly Val Leu Glu Ser His Leu Ala Glu Lys Gly  
 100 105 110  
 Arg Gly Met Glu Leu Ser Asp Leu Ile Val Phe Asn Gly Lys Leu Tyr  
 115 120 125  
 Ser Val Asp Asp Arg Thr Gly Val Val Tyr Gln Ile Glu Gly Ser Lys  
 130 135 140  
 Ala Val Pro Trp Val Ile Leu Ser Asp Gly Asp Gly Thr Val Glu Lys  
 145 150 155 160  
 Gly Phe Lys Ala Glu Trp Leu Ala Val Lys Asp Glu Arg Leu Tyr Val  
 165 170 175  
 Gly Gly Leu Gly Lys Glu Trp Thr Thr Thr Gly Asp Val Val Asn  
 180 185 190  
 Glu Asn Pro Glu Trp Val Lys Val Val Gly Tyr Lys Gly Ser Val Asp  
 195 200 205  
 His Glu Asn Trp Val Ser Asn Tyr Asn Ala Leu Arg Ala Ala Ala Gly  
 210 215 220  
 Ile Gln Pro Pro Gly Tyr Leu Ile His Glu Ser Ala Cys Trp Ser Asp  
 225 230 235 240  
 Thr Leu Gln Arg Trp Phe Phe Leu Pro Arg Arg Ala Ser Gln Glu Arg  
 245 250 255  
 Tyr Ser Glu Lys Asp Asp Glu Arg Lys Gly Ala Asn Leu Leu Leu Ser  
 260 265 270  
 Ala Ser Pro Asp Phe Gly Asp Ile Ala Val Ser His Val Gly Ala Val  
 275 280 285

1501

Val Pro Thr His Gly Phe Ser Ser Phe Lys Phe Ile Pro Asn Thr Asp  
 290 295 300

Asp Gln Ile Ile Val Ala Leu Lys Ser Glu Glu Asp Ser Gly Arg Val  
 305 310 315 320

Ala Ser Tyr Ile Met Ala Phe Thr Leu Asp Gly Arg Phe Leu Leu Pro  
 325 330 335

Glu Thr Lys Ile Gly Ser Val Lys Tyr Glu Gly Ile Glu Phe Ile  
 340 345 350

<210> 1427

<211> 510

<212> PRT

<213> Homo sapiens

<400> 1427

Glu Arg Ser Trp Phe Ala Gln Val Arg Arg Leu Gly Pro His Gly Ala  
 1 5 10 15

Val Ala Arg Leu Arg Val Arg Gly Leu Pro Gly Ala Gly Arg Gly Leu  
 20 25 30

Arg Leu Pro Ala Gly Ala Arg Ala Ala Arg Leu Gly Ala Ala Leu Ser  
 35 40 45

Leu Glu Leu Ala Val Ser Gly Ala Arg Ala Cys Ala Pro Gly Thr Arg  
 50 55 60

Leu Pro Arg Gly Pro Val Gly Gly Ser Trp Asp Ala Leu Ile Val Arg  
 65 70 75 80

Pro Val Arg Arg Trp Arg Arg Val Ala Val Gly Val Asn Ala Cys Val  
 85 90 95

Asp Val Val Leu Ser Gly Val Lys Leu Leu Gln Ala Leu Gly Leu Ser  
 100 105 110

Pro Gly Asn Gly Lys Asp His Ser Ile Leu His Ser Arg Asn Asp Leu  
 115 120 125

Glu Glu Ala Phe Ile His Phe Met Gly Lys Gly Ala Ala Ala Glu Arg  
 130 135 140

Phe Phe Ser Asp Lys Glu Thr Phe His Asp Ile Ala Gln Val Ala Ser  
 145 150 155 160

Glu	Phe	Pro	Gly	Ala	Gln	His	Tyr	Val	Gly	Gly	Asn	Ala	Ala	Leu	Ile	
				165				170				175				
Gly	Gln	Lys	Phe	Ala	Ala	Asn	Ser	Asp	Leu	Lys	Val	Leu	Leu	Cys	Gly	
				180				185				190				
Pro	Val	Gly	Pro	Lys	Leu	His	Glu	Leu	Leu	Asp	Asp	Asn	Val	Phe	Val	
				195				200				205				
Pro	Pro	Glu	Ser	Leu	Gln	Glu	Val	Asp	Glu	Phe	His	Leu	Ile	Leu	Glu	
				210				215				220				
Tyr	Gln	Ala	Gly	Glu	Glu	Trp	Gly	Gln	Leu	Lys	Ala	Pro	His	Ala	Asn	
225				230				235				240				
Arg	Phe	Ile	Phe	Ser	His	Asp	Leu	Ser	Asn	Gly	Ala	Met	Asn	Met	Leu	
				245				250				255				
Glu	Val	Phe	Val	Ser	Ser	Leu	Glu	Glu	Phe	Gln	Pro	Asp	Leu	Val	Val	
				260				265				270				
Leu	Ser	Gly	Leu	His	Met	Met	Glu	Gly	Gln	Ser	Lys	Glu	Leu	Gln	Arg	
				275				280				285				
Lys	Arg	Leu	Leu	Glu	Val	Val	Thr	Ser	Ile	Ser	Asp	Ile	Pro	Thr	Gly	
				290				295				300				
Ile	Pro	Val	His	Leu	Glu	Leu	Ala	Ser	Met	Thr	Asn	Arg	Glu	Leu	Met	
305				310				315				320				
Ser	Ser	Ile	Val	His	Gln	Gln	Val	Phe	Pro	Ala	Val	Thr	Ser	Leu	Gly	
				325				330				335				
Leu	Asn	Glu	Gln	Glu	Leu	Leu	Phe	Leu	Thr	Gln	Ser	Ala	Ser	Gly	Pro	
				340				345				350				
His	Ser	Ser	Leu	Ser	Ser	Trp	Asn	Gly	Val	Pro	Asp	Val	Gly	Met	Val	
				355				360				365				
Ser	Asp	Ile	Leu	Phe	Trp	Ile	Leu	Lys	Glu	His	Gly	Arg	Ser	Lys	Ser	
				370				375				380				
Arg	Ala	Ser	Asp	Leu	Thr	Arg	Ile	His	Phe	His	Thr	Leu	Val	Tyr	His	
385				390				395				400				
Ile	Leu	Ala	Thr	Val	Asp	Gly	His	Trp	Ala	Asn	Gln	Leu	Ala	Ala	Val	
				405				410				415				
Ala	Ala	Gly	Ala	Arg	Val	Ala	Gly	Thr	Gln	Ala	Cys	Ala	Thr	Glu	Thr	
				420				425				430				

1503

Ile Asp Thr Ser Arg Val Ser Leu Arg Ala Pro Gln Glu Phe Met Thr  
 435 440 445

Ser His Ser Glu Ala Gly Ser Arg Ile Val Leu Asn Pro Asn Lys Pro  
 450 455 460

Val Val Glu Trp His Arg Glu Gly Ile Ser Phe His Phe Thr Pro Val  
 465 470 475 480

Leu Val Cys Lys Asp Pro Ile Arg Thr Val Gly Leu Gly Asp Ala Ile  
 485 490 495

Ser Ala Glu Gly Leu Phe Tyr Ser Glu Val His Pro His Tyr  
 500 505 510

&lt;210&gt; 1428

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1428

Pro Pro Leu Pro Pro Arg Ser Phe Pro Asn Leu Phe Ser Arg Pro Glu  
 1 5 10 15

Pro Leu Pro Glu Pro Gly Arg Arg Gly Cys Asn Arg Ser Arg Glu Pro  
 20 25 30

Ala Ala Arg Ala Pro Ser Pro Pro Pro Phe Glu Gly Ala Pro Gly  
 35 40 45

Arg Ala Met Val Lys Val Thr Phe Asn Ser Ala Leu Ala Gln Lys Glu  
 50 55 60

Ala Lys Lys Asp Glu Pro Lys Ser Gly Glu Glu Ala Leu Ile Ile Pro  
 65 70 75 80

Pro Asp Ala Val Ala Val Asp Cys Lys Asp Pro Asp Asp Val Val Pro  
 85 90 95

Val Gly Gln Arg Arg Ala Trp Cys Trp Cys Met Cys Phe Gly Leu Ala  
 100 105 110

Phe Met Leu Ala Gly Val Ile Leu Gly Gly Ala Tyr Leu Tyr Lys Tyr  
 115 120 125

Phe Ala Leu Gln Pro Asp Asp Val Tyr Tyr Cys Gly Ile Lys Tyr Ile  
 130 135 140

Lys Asp Asp Val Ile Leu Asn Glu Pro Ser Ala Asp Ala Pro Ala Ala

1504

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145              150              155              160
Leu Tyr Gln Thr Ile Glu Glu Asn Ile Lys Ile Phe Glu Glu Glu Glu
              165              170              175
Val Glu Phe Ile Ser Val Pro Val Pro Glu Phe Ala Asp Ser Asp Pro
              180              185              190
Ala Asn Ile Val His Asp Phe Asn Lys Lys Leu Thr Ala Tyr Leu Asp
              195              200              205
Leu Asn Leu Asp Lys Cys Tyr Val Ile Pro Leu Asn Thr Ser Ile Val
              210              215              220
Met Pro Pro Arg Asn Leu Leu Glu Leu Leu Ile Asn Ile Lys Ala Gly
225              230              235              240
Thr Tyr Leu Pro Gln Ser Tyr Leu Ile His Glu His Met Val Ile Thr
              245              250              255
Asp Arg Ile Glu Asn Ile Asp His Leu Gly Phe Phe Ile Tyr Arg Leu
              260              265              270
Cys His Asp Lys Glu Thr Tyr Lys Leu Gln Arg Arg Glu Thr Ile Lys
              275              280              285
Gly Ile Gln Lys Arg Glu Ala Ser Asn Cys Phe Ala Ile Arg His Phe
              290              295              300
Glu Asn Lys Phe Ala Val Glu Thr Leu Ile Cys Ser
305              310              315

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&lt;210&gt; 1429

&lt;211&gt; 398

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1429

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His Thr Arg Val Asp Phe Asn Val Pro Met Lys Asn Asn Gln Ile Thr
  1              5              10              15
Asn Asn Gln Arg Ile Lys Ala Ala Val Pro Ser Ile Lys Phe Cys Leu
              20              25              30
Asp Asn Gly Ala Lys Ser Val Val Leu Met Ser His Leu Gly Arg Pro
              35              40              45
Asp Gly Val Pro Met Pro Asp Lys Tyr Ser Leu Glu Pro Val Ala Val
  50              55              60

```

1505

Glu Leu Lys Ser Leu Leu Gly Lys Asp Val Leu Phe Leu Lys Asp Cys  
 65 70 75 80  
 Val Gly Pro Glu Val Glu Lys Ala Cys Ala Asn Pro Ala Ala Gly Ser  
 85 90 95  
 Val Ile Leu Leu Glu Asn Leu Arg Phe His Val Glu Glu Glu Gly Lys  
 100 105 110  
 Gly Lys Asp Ala Ser Gly Asn Lys Val Lys Ala Glu Pro Ala Lys Ile  
 115 120 125  
 Glu Ala Phe Arg Ala Ser Leu Ser Lys Leu Gly Asp Val Tyr Val Asn  
 130 135 140  
 Asp Ala Phe Gly Thr Ala His Arg Ala His Ser Ser Met Val Gly Val  
 145 150 155 160  
 Asn Leu Pro Gln Lys Ala Gly Gly Phe Leu Met Lys Lys Glu Leu Asn  
 165 170 175  
 Tyr Phe Ala Lys Ala Leu Glu Ser Pro Glu Arg Pro Phe Leu Ala Ile  
 180 185 190  
 Leu Gly Gly Ala Lys Val Ala Asp Lys Ile Gln Leu Ile Asn Asn Met  
 195 200 205  
 Leu Asp Lys Val Asn Glu Met Ile Ile Gly Gly Gly Met Ala Phe Thr  
 210 215 220  
 Phe Leu Lys Val Leu Asn Asn Met Glu Ile Gly Thr Ser Leu Phe Asp  
 225 230 235 240  
 Glu Glu Gly Ala Lys Ile Val Lys Asp Leu Met Ser Lys Ala Glu Lys  
 245 250 255  
 Asn Gly Val Lys Ile Thr Leu Pro Val Asp Phe Val Thr Ala Asp Lys  
 260 265 270  
 Phe Asp Glu Asn Ala Lys Thr Gly Gln Ala Thr Val Ala Ser Gly Ile  
 275 280 285  
 Pro Ala Gly Trp Met Gly Leu Asp Cys Gly Pro Glu Ser Ser Lys Lys  
 290 295 300  
 Tyr Ala Glu Ala Val Thr Arg Ala Lys Gln Ile Val Trp Asn Gly Pro  
 305 310 315 320  
 Val Gly Val Phe Glu Trp Glu Ala Phe Ala Arg Gly Thr Lys Ala Leu  
 325 330 335



1506

Met Asp Glu Val Val Lys Ala Thr Ser Arg Gly Cys Ile Thr Ile Ile  
                   340                                  345                                  350

Gly Gly Gly Asp Thr Ala Thr Cys Cys Ala Lys Trp Asn Thr Glu Asp  
                   355                                  360                                  365

Lys Val Ser His Val Ser Thr Gly Gly Gly Ala Ser Leu Glu Leu Leu  
                   370                                  375                                  380

Glu Gly Lys Val Leu Pro Gly Val Asp Ala Leu Ser Asn Ile  
                   385                                  390                                  395

<210> 1430

<211> 249

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (245)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1430

Pro Ala Met Gly Ala Ala Val Phe Phe Gly Cys Thr Phe Val Ala Phe  
                   1                                  5                                  10                                  15

Gly Pro Ala Phe Ala Leu Phe Leu Ile Thr Val Ala Gly Asp Pro Leu  
                   20                                  25                                  30

Arg Val Ile Ile Leu Val Ala Gly Ala Phe Phe Trp Leu Val Ser Leu  
                   35                                  40                                  45

Leu Leu Ala Ser Val Val Trp Phe Ile Leu Val His Val Thr Asp Arg  
                   50                                  55                                  60

Ser Asp Ala Arg Leu Gln Tyr Gly Leu Leu Ile Phe Gly Ala Ala Val  
                   65                                  70                                  75                                  80

Ser Val Leu Leu Gln Glu Val Phe Arg Phe Ala Tyr Tyr Lys Leu Leu  
                   85                                  90                                  95

Lys Lys Ala Asp Glu Gly Leu Ala Ser Leu Ser Glu Asp Gly Arg Ser  
                   100                                  105                                  110

Pro Ile Ser Ile Arg Gln Met Ala Tyr Val Ser Gly Leu Ser Phe Gly  
                   115                                  120                                  125

Ile Ile Ser Gly Val Phe Ser Val Ile Asn Ile Leu Ala Asp Ala Leu

1507

130                      135                      140  
 Gly Pro Gly Val Val Gly Ile His Gly Asp Ser Pro Tyr Tyr Phe Leu  
 145                      150                      155                      160  
 Thr Ser Ala Phe Leu Thr Ala Ala Ile Ile Leu Leu His Thr Phe Trp  
                     165                      170                      175  
 Gly Val Val Phe Phe Asp Ala Cys Glu Arg Arg Arg Tyr Trp Ala Leu  
                     180                      185                      190  
 Gly Leu Val Val Gly Ser His Leu Leu Thr Ser Gly Leu Thr Phe Leu  
                     195                      200                      205  
 Asn Pro Trp Tyr Glu Ala Ser Leu Leu Pro Ile Tyr Ala Val Thr Val  
                     210                      215                      220  
 Ser Met Gly Leu Trp Ala Phe Ile Thr Ala Gly Gly Ser Leu Arg Ser  
 225                      230                      235                      240  
 Ile Gln Arg Ser Xaa Leu Cys Lys Asp  
                     245

&lt;210&gt; 1431

&lt;211&gt; 271

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1431

Arg Pro Thr Arg Pro Val Met Ala Pro Arg Ser Leu Leu Leu Leu Leu  
   1                      5                      10                      15  
 Ser Gly Ala Leu Ala Leu Thr Asp Thr Trp Ala Gly Ser His Ser Leu  
                     20                      25                      30  
 Arg Tyr Phe Ser Thr Ala Val Ser Arg Pro Gly Arg Gly Glu Pro Arg  
                     35                      40                      45  
 Tyr Ile Ala Val Glu Tyr Val Asp Asp Thr Gln Phe Leu Arg Phe Asp  
                     50                      55                      60  
 Ser Asp Ala Ala Ile Pro Arg Met Glu Pro Arg Glu Pro Trp Val Glu  
                     65                      70                      75                      80  
 Gln Glu Gly Pro Gln Tyr Trp Glu Trp Thr Thr Gly Tyr Ala Lys Ala  
                     85                      90                      95  
 Asn Ala Gln Thr Asp Arg Val Ala Leu Arg Asn Leu Leu Arg Arg Tyr  
                     100                      105                      110

1508

Asn Gln Ser Glu Ala Gly Ser His Thr Leu Gln Gly Met Asn Gly Cys  
 115 120 125

Asp Met Gly Pro Asp Gly Arg Leu Leu Arg Gly Tyr His Gln His Ala  
 130 135 140

Tyr Asp Gly Lys Asp Tyr Ile Ser Leu Asn Glu Asp Leu Arg Ser Trp  
 145 150 155 160

Thr Ala Ala Asp Thr Val Ala Gln Ile Thr Gln Arg Phe Tyr Glu Ala  
 165 170 175

Glu Glu Tyr Ala Glu Glu Phe Arg Thr Tyr Leu Glu Gly Glu Cys Leu  
 180 185 190

Glu Leu Leu Arg Arg Tyr Leu Glu Asn Gly Lys Glu Thr Leu Gln Arg  
 195 200 205

Ala Asp Pro Pro Lys Ala His Val Ala His His Pro Ile Ser Asp His  
 210 215 220

Glu Ala Thr Leu Arg Cys Trp Ala Leu Gly Phe Tyr Pro Ala Glu Ile  
 225 230 235 240

Thr Leu Thr Trp Gln Arg Asp Gly Glu Glu Gln Thr Gln Asp Thr Glu  
 245 250 255

Leu Val Glu Thr Arg Pro Ala Gly Asp Gly Thr Phe Arg Ser Gly  
 260 265 270

<210> 1432

<211> 455

<212> PRT

<213> Homo sapiens

<400> 1432

Ala His Ala Ser Gly Ala Pro Glu Gln Arg Pro Arg Pro Pro Arg Leu  
 1 5 10 15

Leu Arg Arg Asp Leu Glu Arg Lys Thr Pro Ala Arg Arg Pro Ala Leu  
 20 25 30

Ala Ser Leu Pro Thr Gly His Thr Ala Pro Pro Pro Arg Pro Arg Cys  
 35 40 45

Ala Arg Pro Val Arg Cys Thr Pro Ala Cys Trp Arg Leu Arg Arg Arg  
 50 55 60

1509

Ala Arg Pro Gly Leu Leu Leu Arg Ala Thr Met Ser Ser Arg Ile Ala  
 65 70 75 80  
 Arg Ala Leu Ala Leu Val Val Thr Leu Leu His Leu Thr Arg Leu Ala  
 85 90 95  
 Leu Ser Thr Cys Pro Ala Ala Cys His Cys Pro Leu Glu Ala Pro Lys  
 100 105 110  
 Cys Ala Pro Gly Val Gly Leu Val Arg Asp Gly Cys Gly Cys Cys Lys  
 115 120 125  
 Val Cys Ala Lys Gln Leu Asn Glu Asp Cys Ser Lys Thr Gln Pro Cys  
 130 135 140  
 Asp His Thr Lys Gly Leu Glu Cys Asn Phe Gly Ala Ser Ser Thr Ala  
 145 150 155 160  
 Leu Lys Gly Ile Cys Arg Ala Gln Ser Glu Gly Arg Pro Cys Glu Tyr  
 165 170 175  
 Asn Ser Arg Ile Tyr Gln Asn Gly Glu Ser Phe Gln Pro Asn Cys Lys  
 180 185 190  
 His Gln Cys Thr Cys Ile Asp Gly Ala Val Gly Cys Ile Pro Leu Cys  
 195 200 205  
 Pro Gln Glu Leu Ser Leu Pro Asn Leu Gly Cys Pro Asn Pro Arg Leu  
 210 215 220  
 Val Lys Val Thr Gly Gln Cys Cys Glu Glu Trp Val Cys Asp Glu Asp  
 225 230 235 240  
 Ser Ile Lys Asp Pro Met Glu Asp Gln Asp Gly Leu Leu Gly Lys Glu  
 245 250 255  
 Leu Gly Phe Asp Ala Ser Glu Val Glu Leu Thr Arg Asn Asn Glu Leu  
 260 265 270  
 Ile Ala Val Gly Lys Gly Ser Ser Leu Lys Arg Leu Pro Val Phe Gly  
 275 280 285  
 Met Glu Pro Arg Ile Leu Tyr Asn Pro Leu Gln Gly Gln Lys Cys Ile  
 290 295 300  
 Val Gln Thr Thr Ser Trp Ser Gln Cys Ser Lys Thr Cys Gly Thr Gly  
 305 310 315 320  
 Ile Ser Thr Arg Val Thr Asn Asp Asn Pro Glu Cys Arg Leu Val Lys  
 325 330 335

1510

Glu Thr Arg Ile Cys Glu Val Arg Pro Cys Gly Gln Pro Val Tyr Ser  
                   340                  345                  350  
 Ser Leu Lys Lys Gly Lys Lys Cys Ser Lys Thr Lys Lys Ser Pro Glu  
                   355                  360                  365  
 Pro Val Arg Phe Thr Tyr Ala Gly Cys Leu Ser Val Lys Lys Tyr Arg  
                   370                  375                  380  
 Pro Lys Tyr Cys Gly Ser Cys Val Asp Gly Arg Cys Cys Thr Pro Gln  
 385                  390                  395                  400  
 Leu Thr Arg Thr Val Lys Met Arg Phe Arg Cys Glu Asp Gly Glu Thr  
                   405                  410                  415  
 Phe Ser Lys Asn Val Met Met Ile Gln Ser Cys Lys Cys Asn Tyr Asn  
                   420                  425                  430  
 Cys Pro His Ala Asn Glu Ala Ala Phe Pro Phe Tyr Arg Leu Phe Asn  
                   435                  440                  445  
 Asp Ile His Lys Phe Arg Asp  
                   450                  455

&lt;210&gt; 1433

&lt;211&gt; 87

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1433

Thr Glu Gly Glu Thr Trp Arg Ser Asp Ser Glu Val Arg Leu Gln Leu  
   1                  5                  10                  15  
 Ala His His Leu Arg Pro Gly Pro Asp Glu Pro Pro Val Ala Ser Ala  
                   20                  25                  30  
 Gly Ala Ala Ala Ala Ser Arg Gly Ala Cys Gly Pro Ser His Ser Arg  
                   35                  40                  45  
 His Cys Leu Pro Ala Gly Leu Glu Pro Ser Glu Arg Pro Asn Pro Arg  
                   50                  55                  60  
 Pro Gly Arg Asp Leu Arg Gly Met Thr Ala Glu Pro Pro Lys Gly Gly  
   65                  70                  75                  80  
 Glu Phe Glu Gly Arg Gly Pro  
                   85

1511

&lt;210&gt; 1434

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1434

Val Trp Arg Ala Gly Ala Gly Met Ala Ser Leu Arg Ser Gln His Gly  
 1 5 10 15  
 Pro Gly Ala Pro Glu Ser Leu Arg Lys Val Leu Met Pro Ser Ser Met  
 20 25 30  
 Gly Leu Leu Leu Ile Leu Tyr Ala Arg Leu Pro Pro Ser Leu Val Gly  
 35 40 45  
 Gln Ala Gly Arg Trp Ile Gly Trp Ala Gly Arg Ala Gly Gly Gln Ala  
 50 55 60  
 Val Arg Gln Pro Ser Pro Thr Val Leu Ile Asp Gly Val Glu Cys Ser  
 65 70 75 80  
 Asp Val Lys Phe Phe Gln Leu Ala Ala Gln Trp Ser Ser His Val Lys  
 85 90 95  
 His Phe Pro Ile Cys Ile Phe Gly His Ser Lys Ala Thr Phe  
 100 105 110

&lt;210&gt; 1435

&lt;211&gt; 103

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1435

Gly Ser Gln Asp Ala Arg Arg Gly Ser Gly Leu Gly Val Ser Ser Phe  
 1 5 10 15  
 Leu Arg Gly Ser Gly Gly Ser Gly Pro Leu Trp Val Gln His Gly Lys  
 20 25 30  
 Arg Gly Arg Tyr Phe Ser Ser Trp Ala Phe Ile Lys Glu Lys Thr Met  
 35 40 45  
 Leu Ala Gly Arg Gly Gly Ser Arg Leu Gln Ser Gln His Phe Gly Arg  
 50 55 60  
 Pro Arg Arg Val Asp His Leu Arg Ser Gly Val Gln Asp Gln Pro Gly  
 65 70 75 80

1512

Gln His Gly Glu Thr Pro Ser Leu Leu Lys Asn Thr Lys Ile Ser Gln  
                     85                    90                    95

Val Trp Trp Leu Thr Leu Met  
                     100

&lt;210&gt; 1436

&lt;211&gt; 413

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1436

Asn Glu Cys Thr Gly Pro Glu Phe Arg Val Asp Pro Arg Val Ala Ser  
   1                    5                    10                    15

Ala Pro Arg Ala Gln Ser Leu Ala Phe Ala Asp Pro Pro Pro Val His  
                     20                    25                    30

Thr Arg Arg Gln Leu Thr Met Asp Asp Asp Ile Ala Ala Leu Val Val  
                     35                    40                    45

Asp Asn Gly Ser Gly Met Cys Lys Ala Gly Phe Ala Gly Asp Asp Ala  
                     50                    55                    60

Pro Arg Ala Val Phe Pro Ser Ile Val Gly Arg Pro Arg His Gln Gly  
   65                    70                    75                    80

Val Met Val Gly Met Gly Gln Lys Asp Ser Tyr Val Gly Asp Glu Ala  
                     85                    90                    95

Gln Ser Lys Arg Gly Ile Leu Thr Leu Lys Tyr Pro Ile Glu His Gly  
                     100                    105                    110

Ile Val Thr Asn Trp Asp Asp Met Glu Lys Ile Trp His His Thr Phe  
                     115                    120                    125

Tyr Asn Glu Leu Arg Val Ala Pro Glu Glu His Pro Val Leu Leu Thr  
                     130                    135                    140

Glu Ala Pro Leu Asn Pro Lys Ala Asn Arg Glu Lys Met Thr Gln Ile  
   145                    150                    155                    160

Met Phe Glu Thr Phe Asn Thr Pro Ala Met Tyr Val Ala Ile Gln Ala  
                     165                    170                    175

Val Leu Ser Leu Tyr Ala Ser Gly Arg Thr Thr Gly Ile Val Met Asp  
                     180                    185                    190

Ser Gly Asp Gly Val Thr His Thr Val Pro Ile Tyr Glu Gly Tyr Ala

1513

195	200	205
Leu Pro His Ala Ile Leu Arg Leu Asp Leu Ala Gly Arg Asp Leu Thr 210	215	220
Asp Tyr Leu Met Lys Ile Leu Thr Glu Arg Gly Tyr Ser Phe Thr Thr 225	230	235 240
Thr Ala Glu Arg Glu Ile Val Arg Asp Ile Lys Glu Lys Leu Cys Tyr 245	250	255
Val Ala Leu Asp Phe Glu Gln Glu Met Ala Thr Ala Ala Ser Ser Ser 260	265	270
Ser Leu Glu Lys Ser Tyr Glu Leu Pro Asp Gly Gln Val Ile Thr Ile 275	280	285
Gly Asn Glu Arg Phe Arg Cys Pro Glu Ala Leu Phe Gln Pro Ser Phe 290	295	300
Leu Gly Met Glu Ser Cys Gly Ile His Glu Thr Thr Phe Asn Ser Ile 305	310	315 320
Met Lys Cys Asp Val Asp Ile Arg Lys Asp Leu Tyr Ala Asn Thr Val 325	330	335
Leu Ser Gly Gly Thr Thr Met Tyr Pro Gly Ile Ala Asp Arg Met Gln 340	345	350
Lys Glu Ile Thr Ala Leu Ala Pro Ser Thr Met Lys Ile Lys Ile Ile 355	360	365
Ala Pro Pro Glu Arg Lys Tyr Ser Val Trp Ile Gly Gly Ser Ile Leu 370	375	380
Ala Ser Leu Ser Thr Phe Gln Gln Met Trp Ile Ser Lys Gln Glu Tyr 385	390	395 400
Asp Glu Ser Gly Pro Ser Ile Val His Arg Lys Cys Phe 405	410	

&lt;210&gt; 1437

&lt;211&gt; 97

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)



1514

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1437

Val Val Pro Ser Thr Lys Asp Phe Leu Val Gly Val Lys Gly Ser Gly  
 1 5 10 15

Gly His Arg Gly Gly Gly Glu Met Ala Phe Ser Xaa Ser Gln Ala Pro  
 20 25 30

Tyr Leu Ser Pro Ala Val Pro Phe Ser Gly Thr Ile Gln Gly Gly Leu  
 35 40 45

Gln Asp Gly Leu Gln Ile Thr Val Asn Gly Thr Val Leu Ser Ser Ser  
 50 55 60

Gly Thr Ser Gly Asn Asp Ile Ala Phe His Phe Asn Pro Arg Phe Glu  
 65 70 75 80

Asp Gly Gly Tyr Val Val Cys Thr Ala Gly Arg Thr Glu Ala Gly Gly  
 85 90 95

Pro

&lt;210&gt; 1438

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1438

Leu Ala Pro Leu Arg Cys Gln Pro Gly Thr Arg Thr Gln Pro Arg Ser  
 1 5 10 15

His Pro Ala Ala Asn Asp Pro Ser Ala Ala Met Ser Ala Ala Gly Ala  
 20 25 30

Arg Gly Leu Arg Ala Thr Tyr His Arg Leu Leu Asp Lys Val Glu Leu  
 35 40 45

Met Leu Pro Glu Lys Leu Arg Pro Leu Tyr Asn His Pro Ala Gly Pro  
 50 55 60

Arg Thr Val Phe Phe Trp Ala Pro Ile Met Lys Trp Gly Leu Val Cys  
 65 70 75 80

Ala Gly Leu Ala Asp Met Ala Arg Pro Ala Glu Lys Leu Ser Thr Ala  
 85 90 95

Gln Ser Ala Val Leu Met Ala Thr Gly Phe Ile Trp Ser Arg Tyr Ser

1515

	100		105		110
Leu	Val	Ile	Ile	Pro	Lys
	115			Asn	Trp
				Ser	Leu
				Phe	Ala
				Val	Asn
				Phe	Phe
Val	Gly	Ala	Ala	Gly	Ala
	130			Ser	Gln
				Leu	Phe
				Arg	Ile
				Trp	Arg
				Tyr	Asn
Gln	Glu	Leu	Lys	Ala	Lys
145				Ala	His
				Lys	

&lt;210&gt; 1439

&lt;211&gt; 343

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (244)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (305)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (325)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (328)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (340)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1439

Trp	Ile	Gln	Arg	Ile	Arg	Ala	Arg	Gly	Lys	Thr	Asn	Leu	Arg	Arg	Thr
1				5					10						15

Thr	Tyr	Leu	Val	Leu	Asp	Glu	Ala	Asp	Arg	Met	Leu	Asp	Met	Gly	Phe
				20				25						30	

Glu	Pro	Gln	Ile	Arg	Lys	Ile	Val	Asp	Gln	Ile	Arg	Pro	Asp	Arg	Gln
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1516

35	40	45
Thr Leu Met Trp Ser Ala Thr Trp Pro Lys Glu Val Arg Gln Leu Ala		
50	55	60
Glu Asp Phe Leu Lys Asp Tyr Ile His Ile Asn Ile Gly Ala Leu Glu		
65	70	75
Leu Ser Ala Asn His Asn Ile Leu Gln Ile Val Asp Val Cys His Asp		
	85	90
Val Glu Lys Asp Glu Lys Leu Ile Arg Leu Met Glu Glu Ile Met Ser		
	100	105
Glu Lys Glu Asn Lys Thr Ile Val Phe Val Glu Thr Lys Arg Arg Cys		
	115	120
Asp Glu Leu Thr Arg Lys Met Arg Arg Asp Gly Trp Pro Ala Met Gly		
	130	135
Ile His Gly Asp Lys Ser Gln Gln Glu Arg Asp Trp Val Leu Asn Glu		
145	150	155
Phe Lys His Gly Lys Ala Pro Ile Leu Ile Ala Thr Asp Val Ala Ser		
	165	170
Arg Gly Leu Asp Val Glu Asp Val Lys Phe Val Ile Asn Tyr Asp Tyr		
	180	185
Pro Asn Ser Ser Glu Asp Tyr Ile His Arg Ile Gly Arg Thr Ala Arg		
	195	200
Ser Thr Lys Thr Gly Thr Ala Tyr Thr Phe Phe Thr Pro Asn Asn Ile		
	210	215
Lys Gln Val Ser Asp Leu Ile Ser Val Leu Arg Glu Ala Asn Gln Ala		
225	230	235
Ile Asn Pro Xaa Leu Leu Gln Leu Val Glu Asp Arg Gly Ser Gly Arg		
	245	250
Ser Arg Gly Arg Gly Gly Met Lys Asp Asp Arg Arg Asp Arg Tyr Ser		
	260	265
Ala Gly Lys Arg Gly Gly Phe Asn Thr Phe Arg Asp Arg Glu Asn Tyr		
	275	280
Asp Arg Gly Tyr Ser Ser Leu Leu Lys Arg Asp Phe Gly Ala Lys Thr		
	290	300
Xaa Asn Gly Gly Tyr Ser Ala Cys Lys Phe Thr Asn Gly Ser Phe Gly		

305                      310                      315                      320

Ser Asn Phe Gly Xaa Cys Trp Xaa Ser Gly Pro Val Leu Gly Leu Gly  
                        325                      330                      335

Ile Pro Thr Xaa Ala Leu Pro  
                        340

```
<210> 1440
<211> 122
<212> PRT
<213> Homo sapiens
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<400> 1440
Ile Cys Val Ser Ala Arg Arg Ala Leu Ser Gly Leu Glu His Gly Leu
  1                      5                      10                      15

Gly Trp Glu Arg Val Trp Glu Lys Met Gly Asn Lys Glu Pro Gly Ser
      20                      25                      30

His Gly His Arg Ser Asp Ala Asp Pro Ser Arg Phe Ser Pro Val Leu
      35                      40                      45

Pro Pro Ala Val Gln Leu Gly Val Trp Arg Glu Glu Gly Arg Gly Gly
      50                      55                      60

Ser Cys Pro Phe Ser Trp Gly Arg Gly Pro Val Ser Ser Thr Trp Leu
      65                      70                      75                      80

Phe Pro Lys Gly Ser Lys Arg Glu Gly Leu Gly Glu Lys Thr Met Glu
      85                      90                      95

Arg Gly Pro Ala Lys Glu Asn Arg Glu Glu Val Ser Gly Leu Ile Ser
      100                      105                      110

Leu Leu Ser Arg Cys Ser Gly Ser Leu Ile
      115                      120

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```
<210> 1441
<211> 74
<212> PRT
<213> Homo sapiens
```

<400> 1441  
Gly His Arg His Thr Pro Pro His Leu Ala Asn Phe Tyr Tyr Phe Phe  
1 5 10 15

1518

Cys Arg Asp Glu Val Ser Leu Cys Pro Gly Trp Ser Gln Thr Pro Val  
                   20                  25                  30  
 Leu Lys Gln Ser Ser His Leu Gly Ser Leu Ser Ala Gly Ile Ile Gly  
                   35                  40                  45  
 Met Ser His Arg Ala Arg Pro His Val Cys Met Leu Lys Val Leu Arg  
           50                  55                  60  
 Ile Pro Met Glu Asn Lys Phe Asp Phe Ala  
   65                  70

&lt;210&gt; 1442

&lt;211&gt; 103

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1442

Ala Xaa Xaa His Gln Pro Ser Leu Lys Gly Thr Lys Ala Gly Ala Pro  
   1                  5                  10                  15

Pro Arg Cys Gly Arg Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu  
           20                  25                  30

Phe Gly Thr Arg Glu Ala Glu Ala Gly Val Gln Trp Cys Asp Leu Gly  
           35                  40                  45

Ser Leu Gln Pro Leu Pro Pro Arg Phe Gln Gln Phe Ser Cys Leu Ser  
   50                  55                  60

Leu Pro Ser Gly Trp Asp Asp Arg Arg Leu Pro Ser Cys Leu Thr Ser  
   65                  70                  75                  80

Phe Cys Ile Phe Ser Arg Asp Gly Val Ser Pro Cys Trp Pro Gly Trp  
           85                  90                  95

Ser Gln Thr Pro Asp Leu Arg  
           100

1519

<210> 1443  
<211> 106  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (48)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (53)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (57)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (63)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (66)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (70)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (72)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (83)  
<223> Xaa equals any of the naturally occurring L-amino acids

1520

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (99)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (100)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (102)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1443

Leu	His	Ala	Ala	Cys	Ala	Ala	Ala	Met	Ser	Leu	Val	Ile	Pro	Glu
1			5					10					15	

Lys	Phe	Gln	His	Ile	Leu	Arg	Val	Leu	Asn	Thr	Asn	Ile	Asp	Gly	Arg
		20						25					30		

Arg	Lys	Ile	Ala	Phe	Ala	Ile	Thr	Ala	Ile	Lys	Gly	Val	Gly	Arg	Xaa
		35					40					45			

Tyr	Ala	His	Val	Xaa	Leu	Arg	Lys	Xaa	Xaa	Ile	Asp	Leu	Thr	Xaa	Arg
	50					55					60				

Ala	Xaa	Glu	Leu	Thr	Xaa	Asp	Xaa	Val	Glu	Arg	Val	Ile	Thr	Ile	Met
65					70					75					80

Gln	Asn	Xaa	Arg	Gln	Tyr	Lys	Ile	Pro	Asp	Trp	Phe	Leu	Asn	Arg	Gln
			85						90					95	

Asn	Asp	Xaa	Xaa	Asp	Xaa	Ser	Thr	Ser	Ser
		100						105	

&lt;210&gt; 1444

&lt;211&gt; 14

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1444

Pro	Val	Trp	Pro	Lys	Trp	Ser	Gly	Trp	Pro	Leu	Ala	Leu	Pro
1				5						10			

1521

&lt;210&gt; 1445

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (119)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (124)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1445

Phe	Leu	Arg	Leu	Val	Leu	Gly	Leu	Leu	Ile	Gly	Arg	Cys	Leu	Gln	Glu
1				5					10					15	

Met	Leu	Lys	Leu	Gly	Thr	Leu	Pro	Pro	Thr	Ser	Lys	Pro	Gln	Leu	Leu
			20					25					30		

Cys	Gln	Met	Val	Ser	Leu	Lys	Ile	Ser	Ala	Cys	Leu	Thr	Thr	Lys	Gly
		35					40					45			

Lys	Tyr	Val	Val	Phe	Phe	Phe	Tyr	Pro	Leu	Asp	Phe	Thr	Phe	Val	Cys
	50					55					60				

Pro	Thr	Glu	Ile	Ile	Ala	Phe	Ser	Asp	Arg	Ala	Glu	Glu	Phe	Lys	Lys
65					70					75					80

Leu	Asn	Cys	Gln	Val	Ile	Gly	Ala	Ser	Val	Asp	Ser	His	Phe	Cys	His
			85						90					95	

Leu	Ala	Trp	Val	Asn	Thr	Pro	Xaa	Lys	Gln	Gly	Gly	Leu	Gly	Pro	Met
			100					105					110		

Asn	Ile	Pro	Leu	Val	Ser	Xaa	Pro	Thr	His	Xaa	Xaa	Ser	Gly
		115					120					125	



1522

&lt;210&gt; 1446

&lt;211&gt; 97

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (92)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1446

Cys Asp Lys Glu Lys Asn Leu Leu His Val Thr Asp Thr Gly Val Gly  
1 5 10 15

Met Thr Arg Glu Glu Leu Val Lys Asn Leu Gly Thr Ile Ala Lys Ser  
20 25 30

Gly Thr Ser Glu Phe Leu Asn Lys Met Thr Glu Ala Gln Glu Asp Gly  
35 40 45

Gln Ser Thr Ser Asp Leu Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser  
50 55 60

Ala Phe Leu Val Ala Asp Lys Val Ile Val Thr Ser Lys His Asn Asn  
65 70 75 80

Asp Thr Gln His Ile Trp Glu Ser Asp Ser Asn Xaa Phe Ser Val Asn  
85 90 95

Cys

&lt;210&gt; 1447

&lt;211&gt; 47

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1447

His Ser Arg His Arg Gly Val Phe Leu Thr Pro Leu Leu Ala Met Ser  
1 5 10 15

Ser His Lys Thr Phe Arg Ile Lys Arg Phe Leu Ala Lys Lys Gln Lys  
20 25 30

Gln Asn Arg Pro Ile Pro Gln Trp Ile Arg Met Lys Thr Gly Lys  
35 40 45

1523

&lt;210&gt; 1448

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1448

Val	Phe	Arg	Val	Glu	Ala	Trp	Arg	Thr	Ser	Gly	Glu	Thr	Pro	Ala	Ile
1				5				10					15		

Ser	Pro	Ser	Lys	Arg	Ala	Arg	Pro	Ala	Glu	Val	Gly	Gly	Met	Gln	Leu
			20				25						30		

Arg	Phe	Ala	Arg	Leu	Ser	Glu	His	Ala	Thr	Ala	Pro	Thr	Arg	Gly	Ser
		35					40					45			

Ala	Arg	Ala	Ala	Gly	Tyr	Asp	Leu	Tyr	Ser	Ala	Tyr	Asp	Tyr	Thr	Ile
	50					55					60				

Pro	Pro	Met	Glu	Lys	Ala	Val	Val	Lys	Thr	Asp	Ile	Gln	Ile	Ala	Leu
65					70				75					80	

Pro	Ser	Gly	Cys	Xaa	Gly	Arg	Val	Ala	Pro	Arg	Ser	Gly	Leu	Ala	Ala
				85					90					95	

Lys	His	Phe	Ile	Asp	Val	Gly	Xaa	Val	Ser
			100					105	

&lt;210&gt; 1449

&lt;211&gt; 60

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1524

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1449

Thr Met Ala Val Gly Lys Asn Lys Arg Leu Thr Lys Gly Gly Lys Lys  
1 5 10 15

Gly Ala Lys Lys Lys Val Val Asp Pro Phe Phe Lys Lys Asp Trp Tyr  
20 25 30

Asp Val Lys Ala Pro Ala Met Phe Xaa Ile Arg Xaa Ile Gly Lys Thr  
35 40 45

Leu Val Thr Arg Thr Gln Gly Thr Lys Ile Ala Ser  
50 55 60

&lt;210&gt; 1450

&lt;211&gt; 45

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1450

Asn Phe Gly Ser Leu Leu Gly Ala Cys Leu Ile Leu Gln Ile Thr Thr  
1 5 10 15

Gly Leu Phe Leu Ala Met His Tyr Ser Pro Asp Ala Ser Thr Ala Phe  
20 25 30

Ser Ser Ile Ala His Ile Thr Arg Asp Val Asn Tyr Gly  
35 40 45

&lt;210&gt; 1451

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1451

Lys Leu Leu Asp Asp Asn Gly Asn Ile Ala Glu Glu Leu Ser Ile Leu  
1 5 10 15

Lys Trp Asn Thr Asp Ser Val Glu Glu Phe Leu Ser Glu Lys Leu Glu  
20 25 30

Arg Ile

1525

&lt;210&gt; 1452

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1452

Pro Arg Val Arg Leu Xaa Asp Glu Thr Asn Ile Cys Asn Gly Lys Pro  
1 5 10 15

Val Asp Gly Leu Thr Thr Leu Arg Asn Gly Thr Leu Val Ala Phe Arg  
20 25 30

Gly His Tyr Phe Trp Met Leu Ser Pro Phe Ser Pro Pro Ser Pro Ala  
35 40 45

Arg Arg Ile Thr Glu Val Leu Gly Asn Pro Phe Pro His  
50 55 60

&lt;210&gt; 1453

&lt;211&gt; 44

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1453

Arg Glu Gln Lys Leu Glu Leu His Arg Gly Ala Ala Ala Leu Glu Leu  
1 5 10 15

Val Asp Pro Pro Gly Cys Arg Asn Ser Ala Arg Gly Cys Ser Glu Pro  
20 25 30

Arg Ser His His Cys Thr Pro Val Trp Ala Thr Glu  
35 40

&lt;210&gt; 1454

&lt;211&gt; 118

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1526

&lt;222&gt; (76)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (84)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (98)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (99)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (106)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1454

Thr	Arg	Val	Ala	Pro	Ser	Val	Leu	Arg	Leu	Ala	Met	Thr	Ser	Tyr	Ser
1				5					10					15	

Tyr	Arg	Gln	Ser	Ser	Ala	Thr	Ser	Ser	Phe	Gly	Gly	Leu	Gly	Gly	Gly
			20					25					30		

Ser	Val	Arg	Ile	Gly	Pro	Gly	Val	Ala	Phe	Arg	Ala	Pro	Ser	Ile	His
		35					40						45		

Gly	Gly	Ser	Gly	Gly	Arg	Gly	Val	Ser	Val	Ser	Ser	Ala	Arg	Phe	Val
	50					55						60			

Ser	Ser	Ser	Ser	Ser	Gly	Gly	Tyr	Gly	Gly	Gly	Xaa	Gly	Gly	Val	Leu
65						70				75					80

Thr	Ala	Ser	Xaa	Gly	Leu	Leu	Ala	Gly	Asn	Glu	Lys	Leu	Thr	Met	Gln
				85					90					95	

Asn	Xaa	Xaa	Thr	Ala	Trp	Leu	Leu	Leu	Xaa	Lys	Phe	Ala	Pro	Xaa	Gly
			100					105						110	

Ala Lys Gly Thr Lys Ser

1527

115

&lt;210&gt; 1455

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1455

Ala	Xaa	Glu	Asn	Ser	Arg	Ile	Val	Leu	Gln	Ile	Asp	Asn	Ala	Arg	Leu
1				5					10					15	

Ala	Ala	Asp	Asp	Phe	Arg	Thr	Lys	Phe	Glu	Thr	Glu	Gln	Ala	Leu	Arg
		20						25					30		

Met	Xaa	Val	Glu	Ala	Asp	Ile	Asn	Gly	Leu	Xaa	Arg	Cys	Trp	Met	Ser
		35					40					45			

&lt;210&gt; 1456

&lt;211&gt; 143

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1528

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1456

Gly Asp Tyr Ser His Tyr Tyr Thr Thr Ile Gln Asp Leu Arg Asp Lys  
1 5 10 15

Ile Leu Gly Ala Thr Ile Glu Asn Ser Arg Ile Val Leu Gln Ile Asp  
20 25 30

Asn Ala Arg Leu Ala Ala Asp Asp Phe Arg Thr Lys Phe Glu Thr Glu  
35 40 45

Gln Ala Leu Arg Met Ser Val Glu Ala Asp Ile Asn Gly Leu Arg Arg  
50 55 60

Val Leu Asp Glu Leu Thr Leu Ala Arg Thr Asp Leu Glu Met Gln Ile  
65 70 75 80

Glu Gly Leu Lys Glu Glu Leu Ala Tyr Leu Lys Lys Asn His Glu Glu  
85 90 95

Glu Ile Ser Thr Leu Arg Gly Gln Val Gly Gly Gln Val Ser Val Glu  
100 105 110

Val Asp Ser Ala Pro Gly Thr Asp Leu Ala Lys Ile Leu Ser Asp Met  
115 120 125

Arg Ser Xaa Tyr Glu Val Met Ala Xaa Gln Asn Arg Lys Asp Ala  
130 135 140

&lt;210&gt; 1457

&lt;211&gt; 116

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1457

Gly Cys Val Gly Val Arg Pro Ser Leu His Pro Ala Thr Ser Thr Ala  
1 5 10 15

Ser Gly Ser Ala Xaa Pro Thr Leu Ala Arg Ala Met Ala Ser Val Ser  
20 25 30

Glu Leu Ala Cys Ile Tyr Ser Ala Leu Ile Leu His Asp Asp Glu Val

1529

```

          35              40              45
Thr Val Thr Glu Asp Lys Ile Asn Ala Leu Ile Lys Ala Ala Gly Val
   50              55              60
Asn Val Glu Pro Phe Trp Pro Gly Leu Phe Ala Lys Ala Leu Ala Asn
   65              70              75              80
Val Asn Ile Gly Ser Leu Ile Cys Asn Val Gly Ala Gly Gly Pro Ala
          85              90              95
Pro Ala Ala Gly Ala Ala Thr Ser Arg Arg Ser Cys Pro Leu His Cys
          100              105              110
Cys Cys Ser Ser
          115

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&lt;210&gt; 1458

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1458

```

Leu Val Pro Asn Ser Ala Arg Ala Ala Ala Ser Ala Ala Asp Ala Ala
   1              5              10              15
Ala Met Arg Tyr Val Ala Ser Tyr Leu Leu Ala Ala Leu Gly Gly Asn
          20              25              30
Ser Ser Pro Ser Ala Lys Gly Ile Lys Lys Ile Leu Asp Asn Xaa Gly
          35              40              45
Ile Glu Ala Asp Asp Asp Arg Leu Asn Lys Val Ile Ser Glu Leu Asn
          50              55              60
Gly Lys Asn Ile Glu Asp Val Ile Ala Gln Gly Ile Gly Lys Leu Ala
          65              70              75              80
Ser Val Pro Ala Gly Gly Ala Val Ala Val Ser Ala Ala Pro Gly Ser
          85              90              95
Ala Ala Pro Ala Ala Gly Ser Ala Pro Ala Ala Ala Glu Glu Lys Lys
          100              105              110

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1530

Asp Glu Lys  
115

&lt;210&gt; 1459

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (115)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (126)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (129)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1459

Ala Ser Asp Ala Leu His Ser Leu Ser Ala Pro Val Leu Arg Leu Ser  
1 5 10 15

Ser Arg Ser Ala Ala Arg Pro Ala Thr Met Thr Glu Gln Ala Ile Ser  
20 25 30

Phe Ala Lys Asp Phe Leu Ala Gly Gly Ile Ala Ala Ala Ile Ser Lys  
35 40 45

Thr Ala Val Ala Pro Ile Glu Arg Val Lys Leu Leu Leu Gln Val Gln  
50 55 60

His Ala Ser Lys Gln Ile Ala Ala Asp Lys Gln Tyr Lys Gly Ile Val  
65 70 75 80

Asp Cys Ile Val Arg Ile Pro Lys Glu Gln Gly Val Leu Ser Phe Trp  
85 90 95

Arg Gly Asn Leu Ala Asn Val Ile Arg Tyr Phe Pro Thr Gln Ala Leu  
100 105 110

1531

Asn Phe Xaa Phe Lys Asp Lys Tyr Lys Gln Xaa Phe Leu Xaa Gly Val  
115 120 125

Xaa Lys His Thr  
130

<210> 1460

<211> 124

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (1)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (8)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (80)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (85)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (107)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (112)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

1532

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (119)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (120)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (121)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1460

Xaa	Ser	Xaa	Lys	Thr	Gly	Phe	Xaa	Asp	Trp	Ile	Ser	Val	Ala	Tyr	Tyr
1				5					10					15	

Gly	Cys	Phe	Arg	Glu	Gly	Ala	Thr	Ile	Ile	Gln	Val	Gly	Lys	Leu	Ile
			20					25					30		

Lys	Glu	Ala	Ala	Gly	Lys	Ser	Asn	Leu	Lys	Arg	Val	Thr	Leu	Glu	Leu
		35					40					45			

Gly	Gly	Lys	Ser	Pro	Cys	Ile	Val	Leu	Ala	Asp	Ala	Asp	Leu	Asp	Asn
	50					55					60				

Ala	Val	Glu	Phe	Ala	His	His	Gly	Val	Phe	Tyr	His	Gln	Gly	Gln	Xaa
65					70				75						80

Cys	Ile	Ala	Ala	Xaa	Arg	Ile	Phe	Val	Glu	Glu	Ser	Ile	Tyr	Asp	Glu
				85					90					95	

Phe	Val	Arg	Arg	Ser	Val	Glu	Arg	Val	Lys	Xaa	Ile	Ser	Leu	Gly	Xaa
				100					105					110	

Pro	Leu	Thr	Pro	Xaa	Val	Xaa	Xaa	Xaa	Pro	Ser	Asp
		115					120				

&lt;210&gt; 1461

&lt;211&gt; 179

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1533

<221> SITE  
<222> (102)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (125)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (142)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (145)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (157)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (163)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (173)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (174)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (176)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1461  
Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Val Val Pro Leu Ala  
1 5 10 15  
Gly Thr Asn Gly Glu Thr Thr Thr Gln Gly Leu Asp Gly Leu Ser Glu  
20 25 30

1534

Arg	Cys	Ala	Gln	Tyr	Lys	Lys	Asp	Gly	Ala	Asp	Phe	Ala	Lys	Trp	Arg							
			35								40							45				
Cys	Val	Leu	Lys	Ile	Gly	Glu	His	Thr	Pro	Ser	Ala	Leu	Ala	Ile	Met							
			50								55							60				
Glu	Asn	Ala	Asn	Val	Leu	Ala	Arg	Tyr	Ala	Ser	Ile	Cys	Gln	Gln	Asn							
			65								70							75			80	
Gly	Ile	Val	Pro	Ile	Val	Glu	Pro	Glu	Ile	Leu	Pro	Asp	Gly	Asp	His							
				85										90					95			
Asp	Leu	Lys	Arg	Leu	Xaa	Val	Cys	Asp	Arg	Lys	Gly	Ala	Trp	Leu	Ala							
			100											105					110			
Ala	Thr	Arg	Leu	Leu	Ser	Asp	His	His	Ile	Tyr	Leu	Xaa	Gly	Thr	Leu							
			115											120					125			
Leu	Lys	Pro	Asn	Met	Val	Pro	Gln	Ala	Met	Leu	Ala	Leu	Xaa	Ser	Phe							
			130											135					140			
Xaa	Met	Lys	Glu	Ile	Ala	His	Gly	Glu	Pro	Val	Ser	Xaa	Ala	Val	Pro							
			145											150					155		160	
Ala	Gln	Xaa	Pro	Pro	Arg	Leu	Ser	Leu	Gly	Ile	Asn	Xaa	Xaa	Cys	Xaa							
				165										170					175			
Gly	Arg	Pro																				

<210> 1462

<211> 31

<212> PRT

<213> Homo sapiens

**<220>**

**<221> SITE**

<222> (13)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1462

Ala Asn Ser Leu Ala Cys Gln Gly Lys Tyr Thr Pro Xaa Gly Gln Ala  
1 5 10 15

Gly Ala Ala Ala Ser Glu Ser Leu Phe Val Ser Asn His Ala Tyr  
20 25 30

1535

<210> 1463  
<211> 71  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (65)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (69)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1463  
Asp Asp Cys Glu Phe Lys Ala Glu Gly Asn Ser Lys Phe Thr Tyr Thr  
1 5 10 15  
Val Leu Glu Asp Gly Cys Thr Lys His Thr Gly Glu Trp Ser Lys Thr  
20 25 30  
Val Phe Glu Tyr Arg Thr Arg Lys Ala Val Arg Leu Pro Ile Val Asp  
35 40 45  
Ile Ala Pro Tyr Asp Ile Gly Gly Pro Asp Gln Glu Phe Gly Val Asp  
50 55 60  
Xaa Gly Pro Val Xaa Phe Leu  
65 70

<210> 1464  
<211> 77  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (6)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (10)

1536

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1464

Xaa Gly Thr Arg His Xaa Leu Arg Thr Xaa Asn Gln Ser Ser Asp Glu  
1 5 10 15

Leu Gln Leu Ser Met Gly Asn Ala Met Phe Val Lys Glu Gln Leu Ser  
20 25 30

Leu Leu Asp Arg Phe Thr Glu Asp Ala Lys Arg Leu Tyr Gly Ser Glu  
35 40 45

Ala Phe Ala Thr Asp Phe Gln Asp Ser Ala Ala Ala Lys Lys Leu Ile  
50 55 60

Asn Asp Tyr Val Lys Asn Gly Thr Arg Gly Thr Ile Thr  
65 70 75

<210> 1465

<211> 105

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (83)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (98)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (103)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (104)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1465

Leu Lys Gly Arg Pro Gly Phe Pro Gly Ser Lys Gly Glu Ala Gly Phe  
1 5 10 15

Phe Gly Ile Pro Gly Leu Lys Gly Leu Ala Gly Glu Pro Gly Phe Lys  
20 25 30

1537

Gly Ser Arg Gly Asp Pro Gly Pro Pro Gly Pro Pro Pro Val Ile Leu  
                   35                                  40                                  45  
 Pro Gly Met Lys Asp Ile Lys Gly Glu Lys Gly Asp Glu Gly Pro Met  
           50                                  55                                  60  
 Gly Leu Lys Gly Tyr Leu Gly Ala Lys Gly Ile Gln Gly Met Pro Gly  
   65                                  70                                  75                                  80  
 Ile Pro Xaa Leu Ser Gly Ile Pro Gly Leu Pro Gly Arg Pro Gly His  
                                   85                                  90                                  95  
 Ile Xaa Gly Ile Lys Gly Xaa Xaa Gly  
                   100                                  105

&lt;210&gt; 1466

&lt;211&gt; 36

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1466

Arg Pro Gly Leu Cys Ala Lys Thr Val Phe Lys Ala Leu Gln Ala Pro  
   1                                  5                                  10                                  15

Ala Leu Xaa Glu Glu His Gly Glu Gly Trp Arg Leu His Pro Trp Gly  
                   20                                  25                                  30

Val Trp Glu Thr  
                   35

&lt;210&gt; 1467

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (76)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;



1538

<221> SITE  
 <222> (79)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (80)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (82)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 1467  
 Arg Val Pro Ala Met Ala Ala Lys Gly Gly Thr Val Lys Ala Ala Ser  
   1                  5                  10                  15  
 Ala Phe Asn Ala Thr Glu Asp Ala Gln Thr Leu Arg Lys Ala Met Lys  
                   20                  25                  30  
 Gly Leu Gly Thr Asp Glu Asp Ala Ile Ile Ser Val Leu Ala Tyr Arg  
           35                  40                  45  
 Asn Thr Ala Gln Arg Gln Glu Ile Arg Thr Ala Leu Gln Glu His His  
   50                  55                  60  
 Ser Ala Gly Asp Leu Val Leu Arg Asn Gly Pro Xaa Phe Val Xaa Xaa  
   65                  70                  75                  80  
 Trp Xaa

<210> 1468  
 <211> 83  
 <212> PRT  
 <213> Homo sapiens  
  
 <220>  
 <221> SITE  
 <222> (15)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (24)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>

1539

<221> SITE  
 <222> (35)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (61)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (66)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (79)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (82)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (83)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1468

Gly Trp His Leu Gly Pro Pro Gly Ser Trp Cys Trp Trp Ser Xaa Cys  
 1 5 10 15

Ile Thr Gly Pro Asn Thr Ser Xaa Cys Cys Trp Thr His Phe Glu Lys  
 20 25 30

Pro Arg Xaa Ile Asp Asn Val Leu Val Ile Phe Ser His Asp Phe Trp  
 35 40 45

Ser Thr Glu Ile Asn Gln Leu Ile Ala Gly Val Asn Xaa Cys Pro Val  
 50 55 60

Leu Xaa Val Phe Phe Pro Phe Ser Ile Gln Leu Phe Pro Asn Xaa Phe  
 65 70 75 80

Pro Xaa Xaa

<210> 1469

1540

<211> 26  
<212> PRT  
<213> Homo sapiens

<400> 1469  
Glu Lys Asp Glu Tyr Ala Cys Arg Val Asn His Val Thr Leu Ser Gln  
1 5 10 15  
Pro Lys Ile Val Lys Trp Asp Arg Asp Met  
20 25

<210> 1470  
<211> 168  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (17)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (136)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (139)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (141)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (143)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (146)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (148)

1541

<223> Xaa equals any of the naturally occurring L-amino acids

$\langle 220 \rangle$

<221> SITE

$\langle 222 \rangle$  (152)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (153)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (158)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1470

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly Gly Arg Ser  
1 5 10 15

Xaa Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser Ser Ser  
20 25 30

Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln Arg Arg  
35 40 45

Asp Trp Glu Asn Pro Gly Val Thr Gln Leu Asn Arg Leu Ala Ala His  
50 55 60

Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu Glu Ala Arg Thr Asp Arg  
65 70 75 80

Pro Ser Gln Gln Leu Arg Ser Leu Asn Gly Lys Trp Asp Ala Pro Cys  
85 90 95

Ser Gly Ala Leu Ser Ala Ala Gly Val Val Val Thr Arg Ser Val Thr  
100 105 110

Ala Thr Leu Ala Ser Ala Leu Arg Pro Val Leu Ser Phe Leu Pro Phe  
115 120 125

Leu Ser Arg His Val Arg Arg Xaa Ser Pro Xaa Ser Xaa Lys Xaa Gly  
130 135 140

Ala Xaa Phe Xaa Val Pro Ile Xaa Xaa Leu Arg Asp Leu Xaa Pro Lys  
145 150 155 160

Asn Leu Ile Arg Val Met Val Thr  
165

1542

&lt;210&gt; 1471

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (116)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (119)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1471

Cys	His	Leu	Asn	Ser	Ile	His	Trp	Pro	Ser	Phe	Tyr	Asn	Val	Val	Thr
1				5					10					15	

Gly	Lys	Thr	Leu	Ala	Xaa	Pro	Asn	Leu	Ile	Ala	Leu	Gln	His	Ile	Pro
			20					25					30		

Leu	Ser	Pro	Ala	Gly	Ser	Asn	Ser	Glu	Glu	Ala	Arg	Thr	Asp	Arg	Pro
		35					40					45			

Ser	Gln	Gln	Leu	Arg	Ser	Leu	Asn	Gly	Glu	Trp	Asp	Ala	Pro	Cys	Ser
	50					55					60				

Gly	Ala	Leu	Ser	Ala	Ala	Gly	Val	Val	Val	Thr	Arg	Ser	Val	Thr	Ala
65					70					75					80

Thr	Leu	Ala	Ser	Ala	Leu	Ala	Xaa	Ala	Pro	Phe	Ala	Phe	Phe	Pro	Ser
					85				90					95	

1543

Phe Leu Ala Thr Phe Ala Gly Phe Pro Arg Gln Ala Leu Asn Xaa Gly  
100 105 110

Leu Pro Leu Xaa Phe Arg Xaa Ser Ala Val Arg His Leu Asp Pro Lys  
115 120 125

Lys Leu Asp  
130

&lt;210&gt; 1472

&lt;211&gt; 179

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1544

<220>  
<221> SITE  
<222> (74)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (82)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (102)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (105)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (109)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (110)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (114)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (117)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (118)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (119)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

1545

<221> SITE  
 <222> (125)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (139)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (150)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (161)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (167)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (179)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 1472  
 Lys Lys Lys Lys Xaa Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
   1                  5                  10                  15  
  
 Lys Lys Lys Lys Gly Gly Arg Xaa Xaa Gly Ser Lys Leu Thr Tyr Ala  
                   20                  25                  30  
  
 Cys Met Xaa Arg His Ser Ser Xaa Ile Gly Ser Pro Lys Phe Asn Ser  
           35                  40                  45  
  
 Leu Ala Xaa Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr  
   50                  55                  60  
  
 Gln Leu Asn Arg Leu Ala Xaa His Pro Xaa Phe Ala Ser Trp Arg Asn  
   65                  70                  75                  80  
  
 Ser Xaa Lys Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg Ser Leu  
           85                  90                  95  
  
 Asn Gly Lys Trp Asp Xaa Pro Cys Xaa Gly Ala Leu Xaa Xaa Ala Gly  
       100                  105                  110



1546

Val Xaa Val Thr Xaa Xaa Xaa Thr Ala Thr Leu Ala Xaa Ala Leu Ala  
 115 120 125

Pro Ala Pro Phe Ala Phe Phe Pro Ser Phe Xaa Ala Thr Phe Ala Gly  
 130 135 140

Phe Pro Arg Gln Ala Xaa Asn Arg Gly Leu Pro Leu Gly Phe Arg Leu  
 145 150 155 160

Xaa Ala Leu Arg Asp Leu Xaa Pro Gln Lys Asn Leu Ile Arg Gly Asp  
 165 170 175

Gly Ser Xaa

<210> 1473

<211> 58

<212> PRT

<213> Homo sapiens

<400> 1473

Ile Ala Ser Gly Arg Ser Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met  
 1 5 10 15

Arg Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala  
 20 25 30

Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu  
 35 40 45

Asn Arg Leu Ala Ala His Pro Pro Phe Ala  
 50 55

<210> 1474

<211> 70

<212> PRT

<213> Homo sapiens

<400> 1474

Ile Ala Ser Gly Arg Ser Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met  
 1 5 10 15

Arg Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala  
 20 25 30

Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu  
 35 40 45

1547

Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu  
50 55 60

Glu Ala Arg Thr Asp Arg  
65 70

&lt;210&gt; 1475

&lt;211&gt; 62

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (59)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (60)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1475

Leu Pro Xaa Ala Xaa Tyr Thr Xaa Xaa Gly Thr Thr Pro His Tyr Arg

1548

1                      5                      10                      15  
Glu Ser Trp Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Pro Gly Ser Thr  
                    20                      25                      30  
His Ala Ser Glu Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Arg Xaa  
                    35                      40                      45  
Asp Asp Leu Glu Asp Pro Lys Leu Thr Tyr Xaa Xaa Met Gln  
                    50                      55                      60

&lt;210&gt; 1476

&lt;211&gt; 80

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

1549

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (55)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (73)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1476

Ile Arg Xaa Xaa Xaa Leu Arg Xaa Asp Thr Thr His Tyr Arg Glu Ser  
1 5 10 15

Trp Tyr Ala Cys Arg Tyr Arg Ser Gly Ile Pro Gly Xaa Thr His Ala  
20 25 30

Ser Val Glu Ile Cys Pro Pro Xaa Ser Arg Pro Xaa Ser Ser Gln Ser  
35 40 45

Asn Gly Glu Gly Tyr Ser Xaa Cys Arg Arg Pro Gln Ala Leu Glu Ala  
50 55 60

Ala Thr Tyr Leu Asn Pro Val Pro Xaa Arg Ile Leu Leu Lys Pro Phe  
65 70 75 80

<210> 1477

<211> 52

<212> PRT

<213> Homo sapiens

<400> 1477

Arg Gln Val Pro His Glu Arg Ala Val Arg Asp Gly Arg Gly Gly Gly  
1 5 10 15

Arg Ser Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met Arg Arg His Ser  
20 25 30

Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala Val Val Leu Gln  
35 40 45

Arg Arg Asp Trp  
50

1550

&lt;210&gt; 1478

&lt;211&gt; 154

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (140)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1478

Ile Ala Ser Gly Arg Ser Arg Gly Ser Lys Leu Thr Tyr Ala Cys Met  
 1 5 10 15

Arg Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe Asn Ser Leu Ala  
 20 25 30

Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly Val Thr Gln Leu  
 35 40 45

Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp Arg Asn Ser Glu  
 50 55 60

Glu Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg Ser Leu Asn Gly  
 65 70 75 80

Glu Trp Asp Ala Pro Cys Ser Gly Ala Leu Ser Ala Ala Gly Val Val  
 85 90 95

Val Thr Arg Ser Val Thr Ala Thr Leu Ala Ser Ala Leu Ala Pro Ala  
 100 105 110

Pro Phe Ala Phe Phe Pro Ser Phe Leu Ala Thr Phe Ala Gly Phe Pro  
 115 120 125

Arg Gln Ala Leu Asn Arg Gly Leu Pro Leu Gly Xaa Arg Phe Lys Cys  
 130 135 140

Phe Thr Asp Leu Asp Pro Lys Lys Leu Asp  
 145 150

&lt;210&gt; 1479

&lt;211&gt; 130

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1551

&lt;221&gt; SITE

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1479

Ile	Ala	Gly	Gly	Arg	Ser	Arg	Gly	Ser	Lys	Leu	Thr	Tyr	Ala	Cys	Met
1				5					10					15	

Arg	Arg	His	Ser	Ser	Ser	Ile	Val	Ser	Pro	Lys	Phe	Asn	Ser	Leu	Ala
			20						25					30	

Val	Val	Leu	Gln	Arg	Arg	Asp	Trp	Glu	Asn	Pro	Gly	Val	Thr	Gln	Leu
		35						40					45		

Asn	Arg	Leu	Ala	Ala	His	Pro	Pro	Phe	Ala	Ser	Trp	Arg	Asn	Ser	Glu
		50					55					60			

Glu	Ala	Arg	Thr	Asp	Arg	Pro	Ser	Gln	Gln	Leu	Arg	Ser	Leu	Asn	Gly
	65				70					75					80

Glu	Trp	Asp	Ala	Pro	Cys	Ser	Gly	Ala	Leu	Ser	Ala	Ala	Gly	Val	Val
					85				90					95	

Val	Thr	Arg	Ser	Val	Thr	Ala	Thr	Leu	Ala	Lys	Arg	Pro	Lys	Arg	Pro
			100						105					110	

Phe	Leu	Ser	Leu	Ser	Ser	Phe	Leu	Phe	Xaa	Pro	Arg	Ser	Ala	Gly	Phe
		115					120						125		

Ser	Pro
	130

&lt;210&gt; 1480

&lt;211&gt; 131

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (112)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1552

&lt;222&gt; (127)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (129)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1480

Ile	Ala	Ser	Gly	Arg	Ser	Arg	Gly	Ser	Lys	Leu	Thr	Tyr	Ala	Cys	Met
1				5					10					15	

Arg	Arg	His	Ser	Ser	Ser	Ile	Val	Ser	Pro	Lys	Phe	Asn	Ser	Leu	Ala
			20					25					30		

Val	Val	Leu	Gln	Arg	Arg	Asp	Trp	Glu	Asn	Pro	Gly	Val	Thr	Gln	Leu
		35					40					45			

Asn	Arg	Leu	Ala	Ala	His	Pro	Pro	Phe	Ala	Ser	Trp	Arg	Asn	Ser	Glu
	50					55					60				

Glu	Ala	Arg	Thr	Asp	Arg	Pro	Ser	Gln	Gln	Leu	Arg	Ser	Leu	Asn	Gly
65					70					75				80	

Glu	Trp	Asp	Ala	Pro	Cys	Ser	Gly	Ala	Leu	Ser	Ala	Ala	Gly	Val	Val
			85						90					95	

Val	Thr	Arg	Ser	Val	Thr	Xaa	Thr	Leu	Ala	Ser	Ala	Leu	Ala	Pro	Xaa
		100						105					110		

Pro	Phe	Ala	Phe	Phe	Leu	Leu	Ser	Arg	His	Gly	Arg	Pro	Ala	Xaa	Pro
		115					120					125			

Xaa	Lys	Leu
		130

&lt;210&gt; 1481

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

1553

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1481

Xaa Ser Ser Arg Ser Arg Ala Ala Arg Ser Arg Gly Ser Lys Leu Thr  
1 5 10 15

Tyr Ala Cys Met Arg Arg His Ser Ser Ser Ile Val Ser Pro Lys Phe  
20 25 30

Asn Ser Leu Ala Val Val Leu Gln Arg Arg Asp Trp Glu Asn Pro Gly  
35 40 45

Val Thr Gln Leu Asn Arg Leu Ala Ala His Pro Pro Phe Ala Ser Trp  
50 55 60

His Asn Ser Glu Glu Ala Arg Thr Asp Arg Pro Ser Gln Gln Leu Arg  
65 70 75 80

Ser Leu Asn Gly Glu Trp Asp Xaa Pro Cys Ser Gly Ala Leu Ser Ala  
85 90 95

Ala Gly Val Val Val Thr Arg Ser Val Thr Ala Thr Leu Ala Ala Pro  
100 105 110

<210> 1482

<211> 53

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (26)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (50)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1482

Glu Asn Val Lys Ala Lys Ile Gln Asp Lys Glu Gly Ile Pro Pro Glu



1554

1                    5                    10                    15  
 Xaa Ser Arg Glu Leu Asn Leu Cys Leu Xaa Lys Gln Leu Gly Arg Met  
                   20                    25                    30  
 Gly Arg Tyr Phe Val Leu Asn Leu Gln Tyr Phe Lys Arg Gly Ser Tyr  
                   35                    40                    45  
 Phe Xaa Ile Leu Cys  
                   50

&lt;210&gt; 1483

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (59)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1483

Ala Asn Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr  
 1                    5                    10                    15

Leu Glu Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile  
                   20                    25                    30

Gln Asp Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala  
                   35                    40                    45

Gly Lys Gln Leu Glu Gly Trp Xaa Gln Leu Xaa Gln Thr  
                   50                    55                    60

&lt;210&gt; 1484

&lt;211&gt; 27

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

1555

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (13)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (20)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (22)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (23)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1484

Gly	Glu	Gly	Pro	Thr	Xaa	Pro	Leu	Pro	Ser	Glu	Thr	Xaa	Gly	Asp	Val
1					5				10					15	

Ala	Pro	Leu	Xaa	Cys	Xaa	Xaa	Gly	Leu	Asn	Met
			20					25		

<210> 1485

<211> 45

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (12)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (24)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (30)

<223> Xaa equals any of the naturally occurring L-amino acids

1556

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1485

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Phe Leu Ala Ala Gly Asn Pro Leu Arg Trp Pro Xaa Ile Leu Thr Ser
 1             5             10             15

Arg Trp Lys Ser Asp Ile Tyr Xaa Arg Lys Ser Asp Gly Xaa Tyr Ile
      20             25             30

Ile Xaa Leu Lys Arg Thr Trp Glu Lys Leu Leu Leu Gly
      35             40             45

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&lt;210&gt; 1486

&lt;211&gt; 140

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1486

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Pro Arg Val Arg Arg Ala Glu Trp Leu Cys Gly Arg Val Ser Glu Thr
 1             5             10             15

Gly Ser Ala Cys Ser Met Ala Asp Gln Leu Thr Glu Glu Gln Ile Ala
      20             25             30

Glu Phe Lys Glu Ala Phe Ser Leu Phe Asp Lys Asp Gly Asp Gly Thr
      35             40             45

Ile Thr Thr Lys Glu Leu Gly Thr Val Met Arg Ser Leu Gly Gln Asn
      50             55             60

Pro Thr Glu Ala Glu Leu Gln Asp Met Ile Asn Glu Val Asp Ala Asp
      65             70             75             80

Gly Asn Gly Thr Ile Asp Phe Pro Glu Phe Leu Thr Met Met Ala Arg
      85             90             95

Lys Met Lys Asp Thr Asp Ser Glu Glu Glu Ile Arg Glu Ala Phe Arg
      100            105            110

Val Phe Asp Lys Asp Gly Asn Gly Tyr Ile Ser Ala Ala Glu Leu Arg
      115            120            125

His Val Met Thr Asn Leu Gly Arg Glu Val Asn Arg
      130            135            140

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1557

<210> 1487  
<211> 36  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (8)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (13)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (16)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (19)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (35)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1487  
Xaa Leu Gly Arg Asn Trp Ala Xaa Phe Thr Gly Lys Xaa Val Gly Xaa  
1 5 10 15  
Ala Ser Xaa Asn Val Tyr Val His Ile Pro His Leu Arg Asn Ser His  
20 25 30  
Glu Lys Xaa Ser  
35

<210> 1488  
<211> 34  
<212> PRT

1558

&lt;213&gt; Homo sapiens

&lt;400&gt; 1488

Ser Gly Pro Leu Trp Ile Leu Gly Asp Val Phe Ile Gly Arg Tyr Tyr  
1 5 10 15

Thr Val Phe Asp Arg Asp Asn Asn Arg Val Gly Phe Ala Glu Ala Ala  
20 25 30

Arg Leu

&lt;210&gt; 1489

&lt;211&gt; 160

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (160)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1489

Pro Thr Asn Xaa Xaa Lys Ser Xaa Glu Leu His Arg Gly Gly Gly Arg  
1 5 10 15

Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr Ser Thr  
20 25 30

Gln Arg Pro Val Asp Ile Val Phe Leu Leu Asp Gly Ser Glu Arg Leu  
35 40 45

Gly Glu Gln Asn Phe His Lys Ala Arg Arg Phe Val Glu Gln Val Ala  
50 55 60

1559

Arg Arg Leu Thr Leu Ala Arg Arg Asp Asp Asp Pro Leu Asn Ala Arg  
65                               70                               75                               80

Val Ala Leu Leu Gln Phe Gly Gly Pro Gly Glu Gln Gln Val Ala Phe  
                             85                               90                               95

Pro Leu Ser His Asn Leu Thr Ala Ile His Glu Ala Leu Glu Thr Thr  
                 100                               105                               110

Gln Tyr Leu Asn Ser Phe Ser His Val Gly Ala Gly Val Val His Ala  
         115                               120                               125

Ile Asn Ala Ile Val Arg Ser Pro Arg Gly Gly Ala Arg Arg His Ala  
     130                               135                               140

Glu Leu Pro Ser Trp Ser Ser Arg Thr Ala Ser Arg Ala Thr Thr Xaa  
145                               150                               155                               160

&lt;210&gt; 1490

&lt;211&gt; 105

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1560

<222> (58)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (59)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (62)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (65)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (82)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

<222> (86)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

&lt;222&gt; (99)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

$\langle 222 \rangle$  (101)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1490

Ala Gln Met Gly Met Leu Lys Gly Pro Leu Leu Asn Lys Phe Leu Thr  
1 5 10 15

Thr Ala Lys Asp Lys Asn Arg Trp Glu Asp Xaa Gly Lys Gln Leu Tyr  
20 25 30

Asn Val Glu Ala Thr Ser Tyr Xaa Leu Xaa Ala Leu Leu Gln Leu Lys  
35 40 45

Xaa Phe Asp Phe Val Pro Pro Val Val Xaa Xaa Leu Asn Xaa Gln Arg  
50 55 60

1561

Xaa Tyr Gly Gly Gly Tyr Gly Ser Thr Gln Ala Thr Phe Met Val Phe  
65 70 75 80  
Gln Xaa Leu Ala Gln Xaa Gln Lys Asp Gly Pro Asp His Gln Ala Leu  
85 90 95  
Asn Leu Xaa Val Xaa Leu Gln Met Leu  
100 105

<210> 1491  
<211> 125  
<212> PRT  
<213> Homo sapiens

<400> 1491  
Arg Asn Thr Leu Ile Ile Tyr Leu Asp Lys Val Ser His Ser Glu Asp  
1 5 10 15  
Asp Cys Leu Ala Phe Lys Val His Gln Tyr Phe Asn Val Glu Leu Ile  
20 25 30  
Gln Pro Gly Ala Val Lys Val Tyr Ala Tyr Tyr Asn Leu Glu Glu Ser  
35 40 45  
Cys Thr Arg Phe Tyr His Pro Glu Lys Glu Asp Gly Lys Leu Asn Lys  
50 55 60  
Leu Cys Arg Asp Glu Leu Cys Arg Cys Ala Glu Glu Asn Cys Phe Ile  
65 70 75 80  
Gln Lys Ser Asp Asp Lys Val Thr Leu Glu Glu Arg Leu Asp Lys Ala  
85 90 95  
Cys Glu Pro Gly Val Asp Tyr Val Tyr Lys Thr Arg Leu Ala Arg Phe  
100 105 110  
Lys Leu Ser Asn Asp Phe Asp Arg Val His His Gly His  
115 120 125

<210> 1492  
<211> 68  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (62)



1562

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1492

Arg Pro Thr Arg Pro Ala Leu Ser Ile Ile Ala Leu Glu Ile Gln Ala  
1 5 10 15

Gln Lys Cys Val Glu Leu Thr Glu Gly Ile Glu Cys Leu Gln Thr His  
20 25 30

Ser Lys Ile Asn Gly Arg Asp Leu Thr Phe Trp Gln Glu Leu Val Ser  
35 40 45

Lys Cys Leu Thr Glu Tyr Ser Ser Lys Gln Ser Gly Ser Xaa Pro Asn  
50 55 60

Val Pro Glu Val  
65

<210> 1493

<211> 74

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (14)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (29)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (52)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (55)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

1563

&lt;221&gt; SITE

&lt;222&gt; (62)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (63)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (74)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1493

Glu	Glu	Ile	Gln	Lys	His	Asn	His	Ser	Lys	Ser	Thr	Trp	Xaa	Asp	Pro
1				5					10					15	

Xaa	Thr	Thr	Arg	Cys	Thr	Asn	Leu	Thr	Lys	Phe	Leu	Xaa	Glu	Ala	Ser
			20					25					30		

Leu	Val	Gly	Glu	Glu	Val	Leu	Arg	Gly	Thr	Ser	Leu	Glu	Val	Thr	Leu
		35					40					45			

Leu	Glu	Glu	Xaa	Leu	Arg	Xaa	Val	Arg	Gly	Thr	Phe	Thr	Xaa	Xaa	Pro
	50					55					60				

Lys	Gly	Lys	Leu	Phe	Pro	Lys	Thr	Phe	Xaa
65						70			

&lt;210&gt; 1494

&lt;211&gt; 54

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (46)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1494

Asp	Ala	Thr	Ser	Pro	Ile	Ile	Glu	Glu	Leu	Ile	Thr	Phe	His	Asp	His
1					5					10				15	

1564

Ala Leu Ile Ile Ile Phe Leu Ile Cys Phe Leu Val Leu Tyr Ala Leu  
                   20                  25                  30

Phe Leu Thr Leu Thr Thr Lys Leu Thr Asn Thr Asn Ile Xaa Asp Ala  
                   35                  40                  45

Xaa Glu Ile Glu Thr Val  
                   50

<210> 1495  
 <211> 38  
 <212> PRT  
 <213> Homo sapiens

<400> 1495  
 Phe Phe Gly His Pro Glu Val Tyr Ile Leu Ile Leu Pro Gly Phe Gly  
   1                  5                  10                  15

Ile Ile Ser His Ile Val Thr Tyr Tyr Ser Gly Lys Lys Glu Pro Phe  
                   20                  25                  30

Gly Tyr Ile Gly Met Val  
                   35

<210> 1496  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<400> 1496  
 Ala Phe Tyr His Ser Ser Leu Ala Pro Thr Pro Gln Leu Gly Gly His  
   1                  5                  10                  15

Trp Pro Pro Thr Gly Ile Thr Pro Leu Asn Pro Leu Glu Val Pro Leu  
                   20                  25                  30

Leu Asn Thr Ser Val Leu Leu Ala Ser Gly Val Ser Ile Thr  
                   35                  40                  45

<210> 1497  
 <211> 60  
 <212> PRT  
 <213> Homo sapiens

<400> 1497

1565

Ala Gln Val Gly Leu Gln Asp Ala Thr Ser Pro Ile Ile Glu Glu Leu  
 1                      5                      10                      15

Ile Thr Phe His Asp His Ala Leu Ile Ile Ile Phe Leu Ile Cys Phe  
                     20                      25                      30

Leu Val Leu Tyr Ala Leu Phe Leu Thr Leu Thr Thr Lys Leu Thr Asn  
                     35                      40                      45

Thr Asn Ile Ser Asp Ala Gln Glu Ile Glu Thr Val  
                     50                      55                      60

<210> 1498  
 <211> 45  
 <212> PRT  
 <213> Homo sapiens

<400> 1498  
 Thr Tyr Glu Tyr Thr Asp Tyr Gly Gly Leu Ile Phe Asn Ser Tyr Ile  
                     1                      5                      10                      15

Leu Pro Pro Leu Phe Leu Glu Pro Gly Asp Leu Arg Leu Leu Asp Gly  
                     20                      25                      30

Asp Asn Arg Val Val Leu Pro Ile Glu Ala Pro Phe Val  
                     35                      40                      45

<210> 1499  
 <211> 69  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (63)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1499  
 His Arg Leu Asp Phe Leu Gln Leu Met Ile Asp Ser Gln Asn Ser Lys  
                     1                      5                      10                      15

Glu Thr Glu Ser His Lys Ala Leu Ser Asp Leu Glu Leu Ala Ala Gln  
                     20                      25                      30

Ser Ile Ile Phe Ile Phe Ala Gly Tyr Glu Thr Thr Ser Ser Val Leu  
                     35                      40                      45

1566

Ser Phe Thr Leu Tyr Glu Leu Ala Thr His Pro Asp Val Gln Xaa Lys  
50 55 60

Leu Gln Lys Gly Asp  
65

&lt;210&gt; 1500

&lt;211&gt; 35

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (23)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1500

Arg Leu Thr Ser Thr Ala Cys Ala Glu Ser Trp Asp Glu Leu Thr Leu  
1 5 10 15

Ala Arg Xaa Asp Leu Glu Xaa Gln Ile Glu Gly Leu Asn Glu Xaa Ala  
20 25 30

Ser Leu Thr  
35

&lt;210&gt; 1501

&lt;211&gt; 126

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1567

<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (33)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (49)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (56)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (67)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (68)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (76)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (80)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (82)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1568

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (98)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1501

Phe	Xaa	Ala	Pro	Ser	Arg	Ile	Ser	Ala	Trp	Xaa	Gly	Pro	Pro	Ala	Ser
1				5					10					15	

Thr	Pro	Ala	Ser	Thr	Met	Ser	Ile	Lys	Val	Thr	Gln	Lys	Ser	Tyr	Lys
			20					25					30		

Xaa	Ser	Thr	Ser	Ser	Pro	Arg	Ala	Phe	Ser	Ser	Arg	Ser	Tyr	Thr	Asn
		35					40					45			

Xaa	Pro	Gly	Ser	Arg	Ile	Asn	Xaa	Ser	Xaa	Phe	Ser	Arg	Ile	Gly	Ser
	50					55					60				

Ser	Asn	Xaa	Xaa	Ser	Gly	Leu	Gly	Gly	Gly	Tyr	Xaa	Gly	Ala	Ser	Xaa
65					70					75					80

Met	Xaa	Gly	Ile	Thr	Ala	Val	Thr	Val	Asn	Gln	Ser	Leu	Leu	Xaa	Pro
				85					90					95	

Leu	Xaa	Leu	Glu	Val	Asp	Pro	Asn	Ile	Gln	Ala	Val	Arg	Thr	Gln	Glu
		100						105						110	

Lys	Glu	Gln	Ile	Xaa	Thr	Leu	Asn	Asn	Lys	Phe	Ala	Ser	Ser
		115					120					125	

&lt;210&gt; 1502

&lt;211&gt; 84

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

<221> SITE  
<222> (10)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (14)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (15)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (18)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (27)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (30)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (44)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (48)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (63)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE



1570

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (76)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (81)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1502

Gln	Arg	Asn	Ser	Xaa	Gly	Ser	Arg	Thr	Xaa	Xaa	Ser	Arg	Xaa	Xaa	Cys
1				5					10					15	

Lys	Xaa	Val	Ala	Met	Phe	Ser	Trp	Asp	Pro	Xaa	Leu	Val	Xaa	Gly	Gly
			20					25					30		

Gly	Ala	Ser	Lys	Met	Ala	Val	Ala	His	Ala	Leu	Xaa	Glu	Lys	Ser	Xaa
		35					40					45			

Ala	Met	Asp	Trp	Cys	Gly	Asn	Asn	Gly	His	Thr	Gly	Leu	Leu	Xaa	Arg
	50					55					60				

Ala	Leu	Xaa	Val	His	Ser	Ser	Xaa	Pro	Trp	Ile	Xaa	Lys	Leu	Trp	Gly
65					70					75				80	

Xaa Ser His His

&lt;210&gt; 1503

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (69)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1571

&lt;222&gt; (70)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1503

Val	Gly	Val	Leu	Gly	Leu	Asp	Leu	Trp	Gln	Val	Lys	Ser	Gly	Thr	Ile
1				5				10					15		

Phe	Asp	Asn	Phe	Leu	Ile	Thr	Asn	Asp	Glu	Ala	Tyr	Ala	Glu	Glu	Phe
			20					25					30		

Gly	Asn	Glu	Thr	Trp	Gly	Val	Thr	Lys	Ala	Ala	Glu	Lys	Gln	Met	Lys
		35					40					45			

Asp	Lys	Gln	Asp	Glu	Glu	Gln	Arg	Leu	Lys	Glu	Glu	Glu	Glu	Asp	Lys
	50					55					60				

Lys	Arg	Lys	Glu	Xaa	Xaa
65					70

&lt;210&gt; 1504

&lt;211&gt; 42

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1572

&lt;400&gt; 1504

Asn Thr Leu Xaa Tyr Xaa Met Lys Ala Thr Xaa Ile Leu Leu Leu Xaa  
 1                      5                      10                      15

Ala Gln Leu Ser Trp Ala Gly Pro Phe His Gln Thr Gly Leu Leu Asp  
                     20                      25                      30

Ser Met Leu Glu His Glu Ala Tyr Xaa Ile  
                     35                      40

&lt;210&gt; 1505

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (46)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (65)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1505

Xaa His Xaa Asp Cys Ser Xaa Pro Ile Val Ala Ala Gly Val Gly Glu  
 1                      5                      10                      15

1573

Phe Glu Ala Gly Ile Ser Lys Asn Gly Gln Thr Arg Glu His Ala Leu  
                     20                    25                    30

Leu Ala Tyr Thr Leu Gly Val Lys Gln Leu Ile Val Gly Xaa Asn Lys  
                     35                    40                    45

Met Asp Ser Thr Glu Pro Pro Tyr Ser Gln Lys Arg Tyr Glu Glu Ile  
                     50                    55                    60

Xaa Lys Glu Val Ser Thr Tyr Xaa  
                     65                    70

&lt;210&gt; 1506

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1506

Ala Glu Thr Arg Lys Arg Lys Gly Leu Lys Glu Gly Ile Pro Ala Leu  
                     1                    5                    10                    15

Asp Asn Phe Leu Asp Lys Leu  
                     20

&lt;210&gt; 1507

&lt;211&gt; 87

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (79)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1507

Lys Leu Pro Leu Lys Ala Lys Met Gly Lys Glu Lys Thr His Ile Asn  
                     1                    5                    10                    15

Ile Val Val Ile Gly His Val Asp Ser Gly Lys Ser Thr Thr Thr Gly  
                     20                    25                    30

His Leu Ile Tyr Lys Cys Gly Gly Ile Asp Lys Arg Thr Ile Glu Lys  
                     35                    40                    45

Phe Glu Lys Glu Ala Ala Glu Met Gly Lys Gly Ser Phe Lys Tyr Ala  
                     50                    55                    60

1574

Trp Val Leu Asp Lys Leu Lys Ala Glu Arg Glu Arg Gly Ile Xaa Ile  
 65 70 75 80

Gly Tyr Leu Leu Val Glu Ile  
 85

&lt;210&gt; 1508

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (74)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (96)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (99)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1508

Pro Asp Pro Xaa Ile Phe Ala Pro Pro Ile Ser Ala Pro Pro Pro Ser  
 1 5 10 15

Ser Gly Thr Arg Asp Arg Ser Gln Arg Ser Leu Asp His Tyr Glu Pro  
 20 25 30

Pro Val Gln Pro Arg Gly Pro Cys Pro Arg Ser Phe Glu Leu Leu Val  
 35 40 45

Arg Ala Val Gly Ala Ala Ala Ala Ala Asp Ala Ala Arg Ala His Arg  
 50 55 60

1575

Gln Arg Trp Ser Cys Arg Cys Cys Val Xaa Arg Ala Ala Leu Pro Phe  
65 70 75 80  
Val Tyr Arg Pro Arg Lys Glu Ser Ile Pro Lys Met Ile Ser Asn Xaa  
85 90 95  
Gln Val Xaa Ala Ile Gly Pro Thr Val Leu Gln Xaa Gly Lys  
100 105 110

&lt;210&gt; 1509

&lt;211&gt; 60

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1576

&lt;400&gt; 1509

Ser Phe Val Glu Leu Pro Leu Ala Ser Ile Val Ser Leu His Ala Ser  
1 5 10 15

Ser Xaa Gly Gly Arg Leu Gln Thr Ser Pro Xaa Pro Ile Gln Xaa Thr  
20 25 30

Pro Pro Lys Asp Thr Cys Ser Pro Xaa Leu Xaa Met Ser Leu Xaa Pro  
35 40 45

Xaa Lys Leu Cys Arg Arg Arg His Gly Pro Trp Tyr  
50 55 60

&lt;210&gt; 1510

&lt;211&gt; 116

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (91)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (92)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (115)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1510

Gly Thr Ser Ser Ser Gln Arg Phe Tyr Lys Glu Asn Leu Gly Gln Gly  
1 5 10 15

Trp Met Thr Gln Lys His Glu Arg Met Lys Val Tyr Val Pro Thr Gly  
20 25 30

Phe Ser Ala Phe Pro Phe Glu Leu Leu His Thr Pro Glu Lys Trp Val  
35 40 45

Arg Phe Lys Tyr Pro Lys Leu Ile Ser Tyr Ser Tyr Met Val Arg Gly

1577

50                      55                      60  
 Gly His Phe Ala Ala Phe Glu Glu Pro Glu Leu Leu Ala Gln Asp Ile  
 65                      70                      75                      80  
 Arg Lys Phe Leu Ser Val Leu Glu Arg His Xaa Xaa Thr Pro Leu Pro  
                     85                      90                      95  
 Pro Leu Ala Thr Ser Pro His Asn Ala Leu Gln Xaa Phe Leu Gly Glu  
                     100                      105                      110  
 Asp Asn Xaa Phe  
                     115

<210> 1511  
 <211> 156  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (11)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (104)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (143)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1511  
 Arg Glu Gln Lys Leu Glu Leu His Arg Gly Xaa Gly Arg Ser Arg Thr  
   1                      5                      10                      15  
 Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr Arg Asp Arg Gly Gly  
                     20                      25                      30  
 Phe Pro Pro Arg Gly Pro Arg Gly Ser Arg Gly Asn Pro Ser Gly Gly  
                     35                      40                      45  
 Gly Asn Val Gln His Arg Ala Gly Asp Trp Gln Cys Pro Asn Pro Ser  
   50                      55                      60  
 Ile Gly Asp Phe Cys Cys Asp Val Ile Val Cys Arg Gly Cys Gly Asn  
   65                      70                      75                      80



1578

Gln Asn Phe Ala Trp Arg Thr Glu Cys Asn Gln Cys Gly Asp Arg Gly  
85 90 95

Arg Gly Gly Pro Gly Gly Met Xaa Gly Gly Arg Gly Gly Leu Met Asp  
100 105 110

Arg Gly Gly Pro Gly Gly Met Phe Arg Gly Gly Arg Gly Gly Asp Arg  
115 120 125

Gly Gly Phe Arg Gly Gly Arg Gly Met Asp Arg Gly Gly Phe Xaa Gly  
130 135 140

Gly Arg Arg Gly Gly Pro Gly Gly Pro Leu Asp Leu  
145 150 155

&lt;210&gt; 1512

&lt;211&gt; 102

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (58)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (89)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

1579

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1512

Pro	Met	Arg	Arg	Pro	Arg	Gly	Glu	Pro	Ala	Pro	Gly	Pro	Arg	Asp	Arg
1				5				10						15	

Leu	Arg	Glu	Arg	Pro	Ala	Gln	Gly	Pro	Gly	Ser	His	Val	Arg	Val	Ala
			20					25					30		

Pro	Leu	Ala	Thr	Val	Asn	Ile	Leu	Xaa	Ser	Leu	Cys	Gln	Leu	Arg	Cys
		35					40					45			

Leu	Pro	Phe	Xaa	Ala	Leu	His	Phe	Val	Xaa	Ser	Pro	Gly	Phe	Ile	Xaa
50						55					60				

Tyr	Ile	Ser	Gly	Thr	Pro	His	Ala	Leu	Ile	Val	Arg	Arg	Tyr	Leu	Ser
65					70					75				80	

Leu	Leu	Asp	Thr	Ala	Val	Glu	Leu	Xaa	Leu	Pro	Arg	Tyr	Arg	Gly	Pro
				85					90					95	

Arg	Leu	Pro	Arg	Xaa	Gln
					100

&lt;210&gt; 1513

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1513

Glu	Thr	Glu	Arg	Gly	Phe	Glu	Glu	Leu	Pro	Leu	Cys	Ser	Cys	Arg	Met
1				5				10						15	

Glu	Ala	Pro	Lys	Ile	Asp	Ser	Ile	Ser	Glu	Arg	Ala	Gly	His	Lys	Cys
			20					25					30		

Met	Ala	Thr	Glu	Ser	Val	Asp	Gly	Glu	Leu	Ser	Gly	Cys	Asn	Ala	Ala
		35					40					45			

Ile	Leu	Lys	Arg	Glu	Thr	Met	Arg	Pro	Ser	Ser	Arg	Val	Ala	Leu	Met
50						55					60				

Val	Leu	Cys	Glu	Thr	His	Arg	Ala	Arg	Met	Val	Lys	His	His	Cys	Cys
65					70				75					80	

1580

Pro Gly Cys Gly Tyr Phe Cys Thr Ala Gly Thr Phe Leu Glu Cys His  
85 90 95

Pro Asp Phe Arg Val Ala His Arg Phe His Lys Ala Cys Val Ser Gln  
100 105 110

Leu Asn Gly Met Val Phe Cys Pro His Cys Gly Glu Asp Thr Ser Glu  
115 120 125

Ala Gln Xaa Val Thr Ile Pro Gly Val Thr Gly  
130 135

<210> 1514

<211> 72

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (11)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (19)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (23)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (25)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (30)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (37)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

1581

<221> SITE  
<222> (41)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (49)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (53)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (54)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (60)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (68)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (70)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1514

Ile Arg His Glu Ser Ile Ser Gly Ala Ser Xaa Lys Asp Ile Val His

1 5 10 15

Ser Gly Xaa Ala Tyr Thr Xaa Glu Xaa Ser Ala Arg Gln Xaa Met Arg

20 25 30

Thr Ala Met Lys Xaa Asn Leu Gly Xaa Asp Leu Arg Thr Ala Ser Tyr

35 40 45

Xaa Asn Ala Ile Xaa Xaa Val Phe Lys Val Tyr Xaa Glu Ala Gly Val

50 55 60

Thr Phe Thr Xaa Met Xaa His Gly

65 70

1582

&lt;210&gt; 1515

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1515

Leu Tyr Pro Pro Ala Cys Ser Ala Thr Arg Thr Pro Ser Thr Met Thr  
1 5 10 15

Thr Ser Ala Ser Ser His Leu Asn Lys Gly Ile Lys Gln Val Tyr Met  
20 25 30

Ser Leu Pro Gln Gly Glu Lys Val Gln Ala Met Tyr Ile Trp Ile Asp  
35 40 45

Gly Thr Gly Glu Gly Leu Arg Cys Lys Thr Arg Thr Leu Asp Ser Glu  
50 55 60

Pro Lys Cys Val Glu Glu Leu Pro Glu Trp Asn Phe Asp Gly Ser Ser  
65 70 75 80

Thr Xaa Gln Ser Xaa Gly Ser Ser  
85

&lt;210&gt; 1516

&lt;211&gt; 105

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1583

<220>  
 <221> SITE  
 <222> (11)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (27)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (38)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (87)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (89)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (94)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (103)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1516  
 Gly Arg Glu Ser Gln Asp Thr Xaa Phe Xaa Xaa Leu Val Glu Arg Val  
   1                  5                  10                  15  
 Ile Gln Gln Leu Glu Gly Ala Phe Ala Leu Xaa Phe Lys Ser Val His  
                   20                  25                  30  
 Phe Pro Gly Gln Ala Xaa Gly Thr Arg Arg Gly Ser Pro Leu Leu Ile  
           35                  40                  45  
 Gly Val Arg Ser Glu His Lys Leu Ser Thr Asp His Ile Pro Ile Leu  
   50                  55                  60  
 Tyr Arg Thr Gly Lys Asp Lys Lys Gly Ser Cys Asn Leu Ser Arg Val  
   65                  70                  75                  80

1584

Asp Ser Thr Thr Cys Leu Xaa Pro Xaa Glu Glu Lys Ala Xaa Glu Tyr  
85 90 95

Tyr Phe Ala Ser Asp Ala Xaa Ala Ala  
100 105

&lt;210&gt; 1517

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1585

&lt;222&gt; (100)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (106)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (109)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (110)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1517

Gly	Xaa	Glu	Lys	Arg	Glu	Arg	Glu	Arg	Glu	Arg	Leu	Val	Ile	Arg	Gln
1				5					10					15	

Xaa	Pro	Xaa	Val	Gln	Xaa	Leu	Gln	Ala	Tyr	Lys	Pro	Arg	Glu	Asn	Asp
			20					25						30	

Xaa	Leu	Ala	Leu	Glu	Lys	Ala	Asp	Val	Val	Met	Val	Thr	His	Gln	Ser
		35					40						45		

Ser	Ala	Arg	Leu	Ala	Gly	Gly	Arg	Glu	Ala	Leu	Arg	Arg	Gly	Ala	Arg
	50					55					60				

Leu	Val	Ser	Cys	Asp	Ser	Xaa	Xaa	Ser	Ser	Phe	Pro	Thr	Gln	Arg	Ser
	65					70					75				80

Val	Thr	Gln	Asn	Leu	Lys	Gly	Ser	Phe	Ile	Glu	Cys	Lys	Thr	Cys	Gln
				85					90					95	

Thr	Thr	Ala	Xaa	Gly	Asn	Ser	Lys	Pro	Xaa	Phe	Ser	Xaa	Xaa	Glu	Gly
			100					105						110	

Val	Phe	Val	Ser	Trp	Lys	Asn	Lys	Leu
	115						120	

&lt;210&gt; 1518

&lt;211&gt; 146

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;



1586

<221> SITE  
 <222> (71)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (118)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (132)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (135)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (138)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1518  
 Arg Gly Pro Ala Gln Arg Gly Glu Gly Ala Arg Glu Ala Asn Lys Lys  
           1                  5                  10                  15  
 Ile Glu Lys Gln Leu Gln Lys Asp Lys Gln Val Tyr Arg Ala Thr His  
                   20                  25                  30  
 Arg Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr Ile Val  
                   35                  40                  45  
 Lys Gln Met Arg Ile Leu His Val Asn Gly Phe Asn Gly Asp Ser Glu  
           50                  55                  60  
 Lys Ala Thr Lys Val Gln Xaa Ile Lys Asn Asn Leu Lys Glu Ala Ile  
           65                  70                  75                  80  
 Glu Thr Ile Val Ala Ala Met Ser Asn Leu Val Pro Pro Val Glu Leu  
                   85                  90                  95  
 Ala Asn Pro Glu Asn Gln Phe Arg Val Asp Tyr Ile Leu Ser Val Met  
                   100                  105                  110  
 Asn Val Pro Asp Phe Xaa Phe Pro Pro Glu Phe Tyr Glu His Ala Lys  
           115                  120                  125  
 Ala Leu Trp Xaa Asp Glu Xaa Val Arg Xaa Cys Tyr Glu Arg Ser Asn  
           130                  135                  140

1587

Glu Tyr  
145

&lt;210&gt; 1519

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1519

Asp Ser Gln Arg Gln Ala Thr Lys Asp Ala Gly Val Ile Ala Gly Leu  
1 5 10 15

Asn Val Leu Arg Ile Ile Asn Glu Pro Thr Ala Ala Ala Ile Ala Tyr  
20 25 30

Gly Leu Asp Arg Thr Gly Lys Gly Glu Arg Asn Val Leu Ile Phe Asp  
35 40 45

Leu Gly Gly Gly Thr Phe Asp Val Ser Ile Leu Thr Ile Asp Asp Gly  
50 55 60

Ile Phe Glu Val Lys Ala Thr Xaa Gly Asp Thr His Leu Gly Gly Glu  
65 70 75 80

Asp Phe Asp Asn Arg Leu Val Asn His Phe Val Glu Glu Phe Lys Arg  
85 90 95

Lys His Lys Lys Asp Ile Ser Gln Asn Lys Arg Ala Val Arg Arg Leu  
100 105 110

Arg Thr Ala Ala Arg Gly Pro Arg Gly Pro Cys Arg Pro Ala Pro Arg  
115 120 125

Pro Ala Trp Arg Ser Thr Ser Leu Phe  
130 135

&lt;210&gt; 1520

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1588

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (45)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (99)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1520

Cys Arg Lys Ser Ser Trp Lys Arg Trp Trp Pro Gln Ser Lys Leu Xaa

1 5 10 15

Thr Arg Xaa Ile Val Thr Ile Gly Ile Lys Ala Met Ala Thr Met Asp

20 25 30

Ile Thr Ala Lys Val Thr Val Val Met Glu Asp Met Xaa Tyr Thr Gly

35 40 45

Tyr Asn Asn Tyr Tyr Gly Tyr Gly Asp Tyr Ser Asn Gln Gln Ser Gly

50 55 60

Tyr Gly Lys Val Ser Arg Arg Gly Gly His Gln Asn Ser Tyr Lys Pro

65 70 75 80

Tyr Leu Asn Tyr Ser Ile Cys Asn Leu Ser Pro Thr Gly Gly Glu Ala

85 90 95

Tyr Phe Xaa Ile

100

&lt;210&gt; 1521

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1589

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (110)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1521

Asp	Ala	Trp	Ala	Leu	Ala	Pro	Gly	Pro	Val	Leu	Phe	Ser	Asn	Met	Val
1				5					10					15	

Cys	Leu	Lys	Phe	Pro	Gly	Ser	Ser	Cys	Met	Ala	Ala	Leu	Thr	Val	Thr
		20					25						30		

Leu	Met	Val	Leu	Asn	Ser	Pro	Leu	Ala	Leu	Ala	Gly	Asp	Thr	Arg	Pro
		35					40					45			

Arg	Phe	Leu	Glu	Gln	Val	Lys	His	Glu	Cys	His	Phe	Phe	Asn	Gly	Thr
		50				55					60				

Glu	Arg	Val	Arg	Phe	Leu	Asp	Xaa	Tyr	Phe	Tyr	His	Gln	Glu	Glu	Tyr
65					70					75					80

Val	Arg	Phe	Asp	Ser	Asp	Val	Gly	Glu	Tyr	Arg	Ala	Val	Thr	Xaa	Leu
			85						90					95	

Gly	Arg	Pro	Asn	Ser	Glu	Tyr	Trp	Asn	Ser	Gln	Lys	Asp	Xaa	Xaa	Asp
		100						105						110	

Arg	Ser	Gly	Pro	Arg	Trp	Thr	Pro	Thr	Ala	Xaa	Thr	Leu	Arg	Gly	Trp
		115				120						125			

Val

1590

<210> 1522  
<211> 113  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (2)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (6)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (40)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (44)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (53)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (65)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (67)  
<223> Xaa equals any of the naturally occurring L-amino acids

1591

<220>  
 <221> SITE  
 <222> (74)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (80)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (90)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (93)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (97)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (110)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1522

Xaa Xaa Thr Asp Ser Xaa Arg Pro Asp Ser Arg Val Asp Pro Arg Val  
 1 5 10 15

Arg Glu Val Thr Asp Tyr Ala Ile Ala Arg Arg Ile Val Asp Leu His  
 20 25 30

Ser Arg Ile Glu Glu Ser Ile Xaa Asn Ile Tyr Xaa Leu Asp Asp Ile  
 35 40 45

Arg Arg Tyr Leu Xaa Tyr Ala Arg Lys Xaa Lys Pro Lys Asn Ser Lys  
 50 55 60

Xaa Ser Xaa Asp Phe Ile Val Glu Gln Xaa Lys His Leu Arg Pro Xaa  
 65 70 75 80

Asp Gly Phe Trp Ser Ser Pro Val Phe Xaa Glu Gly Xaa Ser Cys Gly  
 85 90 95

Xaa Ile Glu Gly Leu Gly Ser Val Ser Leu Gly Ser Gln Xaa Leu Arg

1592

100

105

110

Val

&lt;210&gt; 1523

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1523

Pro	Cys	Lys	Gly	Ser	Ile	Ile	Thr	Trp	Ser	Leu	Ile	Arg	Asp	Leu	Xaa
1				5				10						15	

Glu	Trp	Leu	His	Glu	Gly	Gln	Leu	Ala	Leu	Thr	Phe	Asn	Gln	Xaa	Asn
			20				25						30		

&lt;210&gt; 1524

&lt;211&gt; 28

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1524

Pro	Cys	Lys	Gly	Ser	Ile	Ile	Thr	Cys	Ser	Leu	Asn	Arg	Asp	Leu	Tyr
1				5				10						15	

Glu	Trp	Leu	His	Glu	Gly	Ser	Ala	Val	Ser	Tyr	Phe
			20				25				

&lt;210&gt; 1525

&lt;211&gt; 92

&lt;212&gt; PRT

1593

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (23)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (75)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (76)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (92)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1525

Xaa Glu Gln Lys Leu Xaa Leu His Arg Gly Gly Arg Ser Arg Thr

1

5

10

15



1594

Ser Gly Ser Pro Xaa Leu Xaa Glu Phe Gly Thr Ser Gly Thr Arg Pro  
                   20                  25                  30  
 Cys Gly Val Tyr Thr Pro Arg Cys Gly Ser Gly Leu Leu Cys Tyr Pro  
                   35                  40                  45  
 Pro Arg Gly Val Glu Lys Pro Leu His Thr Leu Met His Gly Gln Gly  
                   50                  55                  60  
 Val Cys Met Glu Leu Ala Xaa Ile Glu Ala Xaa Xaa Glu Ser Leu Xaa  
                   65                  70                  75                  80  
 Pro Ser Asp Lys Asp Glu Gly Asp His Pro Asn Xaa  
                   85                  90

&lt;210&gt; 1526

&lt;211&gt; 154

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (118)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1526

Xaa Glu Pro Ser Pro Gly Ile Phe Arg Trp Phe His Leu Val Asn Arg  
   1                  5                  10                  15  
 Thr Glu Gln Arg Glu Leu Thr Met Glu Phe Gly Leu Ser Trp Leu Phe  
                   20                  25                  30  
 Leu Val Ala Ile Leu Lys Gly Val Gln Cys Glu Val Gln Leu Val Glu  
                   35                  40                  45  
 Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys  
                   50                  55                  60  
 Thr Val Ser Gly Phe Thr Phe Arg Asn Tyr Ala Met Ser Trp Val Arg  
   65                  70                  75                  80  
 Gln Gly Pro Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Asp Gly Ser  
                   85                  90                  95

1595

Gly Tyr Asn Thr Tyr Tyr Glu Arg Ser Leu Gln Gly Arg Phe Ser Val  
                   100                  105                  110  
 Ser Arg Asp Asn Ser Xaa Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu  
                   115                  120                  125  
 Gly Ala Glu Asp Thr Ala Ile Tyr Tyr Cys Ala Lys Thr Glu Arg Met  
                   130                  135                  140  
 Gly Thr Gly Trp Tyr Gly Arg Asn Asp Tyr  
                   145                  150

&lt;210&gt; 1527

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (129)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (133)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (134)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1527

Gly Lys Leu Val Arg Leu Gln Val Pro Val Arg Asn Ser Arg Val Asp  
           1                  5                  10                  15  
 Pro Arg Val Arg Thr Val Thr Pro Gly Glu Thr Ala Ser Ile Ser Cys  
                   20                  25                  30  
 Arg Ser Ser Gln Thr Leu Leu His Val Asn Gly His Asn Tyr Leu Asp  
                   35                  40                  45  
 Trp Tyr Met Gln Lys Pro Gly Gln Pro Pro Gln Leu Val Val Tyr Arg  
           50                  55                  60

1596

Gly Ser Asn Arg Ala Ser Gly Val Pro Asp Arg Phe Ser Gly Gly Gly  
 65 70 75 80  
 Ser Gly Thr Asp Phe Thr Leu Arg Ile Thr Thr Val Glu Ala Xaa Asp  
 85 90 95  
 Val Gly Val Tyr Tyr Cys Met Gln Ala Leu Gln Ser Pro Tyr Thr Phe  
 100 105 110  
 Gly Gln Gly Thr Lys Leu Glu Ile Lys Arg Thr Val Gly Cys Thr Ile  
 115 120 125  
 Xaa Leu His Leu Xaa Xaa Ile  
 130 135

&lt;210&gt; 1528

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1528

Arg Glu Gln Lys Leu Glu Leu His Arg Gly Gly Gly Arg Ser Arg Thr  
 1 5 10 15  
 Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr Ser Gly Trp Ala Leu  
 20 25 30  
 Arg Ile Ser Arg Phe Leu Pro Gly Phe His Ser Phe Ala Pro Cys Thr  
 35 40 45  
 Val Ala Pro Ser Leu Arg Ala Gln Pro Ala Lys Gln Arg Ala Pro Val  
 50 55 60  
 Ala Gly Val Met Gln Arg Ala Arg Pro Thr Leu Trp Ala Ala Ala Leu  
 65 70 75 80  
 Thr Leu Leu Val Leu Leu Arg Gly Pro Pro Val Ala Arg Ala Gly Ala  
 85 90 95

1597

Ser Ser Gly Gly Leu Gly Pro Val Val Arg Cys Glu Pro Cys Asp Ala  
 100 105 110

Arg Ala Leu Ala Xaa Cys Ala Pro Ser Ala Arg Arg Val Arg Arg Asn  
 115 120 125

Leu Val Arg Gln Ala Gly Leu Ala Xaa Ala Ala  
 130 135

&lt;210&gt; 1529

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1529

Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Ile Asp Asp Thr Asn  
 1 5 10 15

Ile Thr Arg Leu Gln Leu Glu Thr Glu Ile Glu Ala Leu Lys Glu Glu  
 20 25 30

Leu Leu Phe Met Lys Lys Asn His Glu Glu Glu Val Lys Gly Leu Gln  
 35 40 45

Ala Gln Ile Ala Ser Ser Gly Leu Thr Val Glu Val Asp Ala Pro Lys  
 50 55 60

Ser Gln Asp Leu Ala Lys Ile Met Ala Asp Ile Arg Ala Gln Tyr Asp  
 65 70 75 80

Glu Leu Ala Arg Lys Asn Arg Glu Glu Leu Asp Lys Tyr Trp Ser Gln  
 85 90 95

Gln Ile Glu Glu Ser Thr Thr Val Val Thr Thr Gln Ser Ala Glu Val  
 100 105 110

Gly Ala Ala Glu Thr Thr Leu Thr Glu Leu Arg Arg Thr Val Gln Ser  
 115 120 125

Leu Glu Ile Asp Leu Gly Leu  
 130 135

&lt;210&gt; 1530

&lt;211&gt; 132

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1598

&lt;400&gt; 1530

Trp Ile Pro Arg Ala Ala Gly Ile Arg His Glu Gln Val Pro Ala Arg  
1 5 10 15

Lys Lys Arg Pro Lys Arg Leu Arg Thr Gly Asn Met Val Arg Ser Gly  
20 25 30

Asn Lys Ala Ala Val Val Leu Cys Met Asp Val Gly Phe Thr Met Ser  
35 40 45

Asn Ser Ile Pro Gly Ile Glu Ser Pro Phe Glu Gln Ala Lys Lys Val  
50 55 60

Ile Thr Met Phe Val Gln Arg Gln Val Phe Ala Glu Asn Lys Asp Glu  
65 70 75 80

Ile Ala Leu Val Leu Phe Gly Thr Asp Gly Thr Asp Asn Pro Leu Ser  
85 90 95

Gly Gly Asp Gln Tyr Gln Asn Ile Thr Val His Arg His Leu Met Leu  
100 105 110

Pro Asp Phe Asp Leu Leu Glu Asp Ile Glu Lys Gln Asn Pro Thr Arg  
115 120 125

Phe Ser Thr Gly  
130

&lt;210&gt; 1531

&lt;211&gt; 94

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1599

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (61)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (69)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (75)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (94)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1531

Arg	Lys	Arg	Leu	Lys	Gly	Glu	Glu	Gln	Lys	Leu	Leu	Arg	Asn	Ala	Arg
1				5					10					15	

Arg	Xaa	Gln	Lys	Met	Ala	Cys	Gln	Met	Thr	Xaa	Asn	His	Ser	Ser	Val
			20					25					30		

Ser	Xaa	Leu	Lys	Gly	Ser	Ser	Leu	Gln	Asp	Arg	Arg	Ala	Ser	Arg	Phe
		35					40					45			

Leu	Ile	Lys	Ser	Val	Gln	Lys	Ser	Ser	Gly	Val	Gln	Xaa	Asp	Pro	Ser
	50					55					60				

Ser	Ser	Ile	Ser	Xaa	Pro	Ser	Leu	Thr	Ala	Xaa	Trp	Ser	Xaa	Leu	Pro
65					70					75				80	

Trp	His	Leu	Arg	Gly	Pro	Lys	Ala	Ala	Lys	Thr	Leu	Lys	Xaa
				85					90				

&lt;210&gt; 1532

&lt;211&gt; 153

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1600

&lt;400&gt; 1532

Gln Thr Thr Met Cys Tyr Gly Lys Cys Ala Arg Cys Ile Gly His Ser  
 1 5 10 15

Leu Val Gly Leu Ala Leu Leu Cys Ile Ala Ala Asn Ile Leu Leu Tyr  
 20 25 30

Phe Pro Asn Gly Glu Thr Lys Tyr Ala Ser Glu Asn His Leu Ser Arg  
 35 40 45

Phe Val Trp Phe Phe Ser Gly Ile Val Gly Gly Gly Leu Leu Met Leu  
 50 55 60

Leu Pro Ala Phe Val Phe Ile Gly Leu Glu Gln Asp Asp Cys Cys Gly  
 65 70 75 80

Cys Cys Gly His Glu Asn Cys Gly Lys Arg Cys Ala Met Leu Ser Ser  
 85 90 95

Val Leu Ala Ala Leu Ile Gly Ile Ala Gly Ser Gly Tyr Cys Val Ile  
 100 105 110

Val Ala Ala Leu Gly Leu Ala Glu Gly Pro Leu Cys Leu Asp Ser Leu  
 115 120 125

Gly Gln Trp Asn Tyr Thr Phe Ala Ser Thr Glu Gly Gln Val Pro Ser  
 130 135 140

Gly Tyr Leu His Met Val Arg Val His  
 145 150

&lt;210&gt; 1533

&lt;211&gt; 142

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1533

Leu Cys Leu Leu Arg Thr Thr Val Thr Glu Val Ser Arg Ala Phe Ser  
 1 5 10 15

Leu Leu Cys Lys Met Ala Thr Leu Lys Glu Lys Leu Ile Ala Pro Val  
 20 25 30

Ala Glu Glu Glu Ala Thr Val Pro Asn Asn Lys Ile Thr Val Val Gly  
 35 40 45

Val Gly Gln Val Gly Met Ala Cys Ala Ile Ser Ile Leu Gly Lys Ser  
 50 55 60

1601

Leu Ala Asp Glu Leu Ala Leu Val Asp Val Leu Glu Asp Lys Leu Lys  
 65 70 75 80  
 Gly Glu Met Met Asp Leu Gln His Gly Ser Leu Phe Leu Gln Thr Pro  
 85 90 95  
 Lys Ile Leu Ala Asp Lys Asp Tyr Ser Val Thr Ala Asn Ser Lys Ile  
 100 105 110  
 Val Val Val Thr Ala Gly Val Arg Gln Gln Glu Gly Glu Ser Arg Leu  
 115 120 125  
 Asn Leu Val Gln Arg Asn Val Asn Val Phe Lys Phe Ile Ile  
 130 135 140

&lt;210&gt; 1534

&lt;211&gt; 67

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (54)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (61)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1534

Ala His Cys His Ala Pro Pro Thr Thr Ala Arg Arg Ala Phe Pro Ile  
 1 5 10 15

Pro Phe Gly Ser Lys Ser Asn Met Ala Thr Leu Lys Asp Gln Leu Ile  
 20 25 30

Tyr Asn Leu Leu Lys Glu Glu Gln Thr Xaa Gln Asn Lys Ile Thr Xaa  
 35 40 45



1602

Val Gly Val Gly Ala Xaa Gly Met Ala Cys Ala Ile Xaa Ile Leu Met  
50 55 60

Lys Asp Leu  
65

&lt;210&gt; 1535

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1535

Xaa Lys Lys Tyr Leu Gly Asp Xaa Ile Glu Gly Thr Pro Ala Gly Thr  
1 5 10 15

Gly Pro Glu Phe Pro Gly Leu Leu Thr Cys Leu Leu Gln Leu Ile Met  
20 25 30

Val Thr Asn Lys Ala Ile Ala Ser Gln Ile Ser Gln Ile Lys His Phe  
35 40 45

Phe His Cys Ile Leu Val Val Val Cys Pro Asn Ser Ser Met Tyr Leu  
50 55 60

Ile Met Ser Gly Ser Ile Leu His  
65 70

&lt;210&gt; 1536

&lt;211&gt; 80

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1603

<220>  
 <221> SITE  
 <222> (45)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (50)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (58)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (68)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1536  
 Gly Lys Ala Trp Gly Ser Glu Cys Glu Lys Cys Pro Leu Pro Gly Thr  
   1                  5                  10                  15  
 Glu Ala Phe Xaa Glu Ile Cys Pro Ala Gly His Gly Tyr Thr Tyr Ala  
                   20                  25                  30  
 Ser Ser Asp Ile Arg Leu Ser Met Arg Lys Ala Glu Xaa Glu Glu Leu  
           35                  40                  45  
 Ala Xaa Pro Pro Arg Glu Gln Gly Gln Xaa Ser Ser Trp Ala Leu Pro  
   50                  55                  60  
 Gly Pro Thr Xaa Lys Gln Pro Leu Arg Val Arg His Gly His Leu Ala  
   65                  70                  75                  80

<210> 1537  
 <211> 137  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (58)  
 <223> Xaa equals any of the naturally occurring L-amino acids

1604

<220>  
 <221> SITE  
 <222> (74)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (122)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (134)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (136)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (137)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1537  
 Arg Lys Gln Cys Gln Asp Ser Lys Asp Ser Asn His Leu Pro Lys Met  
     1                    5                    10                    15  
 Ser Leu Ser Ala Phe Thr Leu Phe Leu Ala Leu Ile Gly Gly Thr Ser  
                     20                    25                    30  
 Gly Gln Tyr Tyr Asp Tyr Asp Phe Pro Leu Ser Ile Tyr Gly Gln Ser  
                     35                    40                    45  
 Ser Pro Asn Cys Ala Pro Glu Cys Asn Xaa Pro Glu Ser Tyr Pro Ser  
                     50                    55                    60  
 Ala Met Tyr Cys Asp Glu Leu Lys Leu Xaa Ser Val Pro Met Val Pro  
     65                    70                    75                    80  
 Pro Gly Ile Lys Tyr Leu Tyr Leu Arg Asn Asn Gln Ile Asp His Ile  
                     85                    90                    95  
 Asp Glu Lys Ala Phe Glu Asn Val Thr Asp Leu Gln Trp Leu Ile Leu  
                     100                    105                    110  
 Asp His Asn Leu Leu Glu Asn Ser Lys Xaa Lys Gly Arg Val Phe Ser  
                     115                    120                    125

1605

Lys Leu Lys Gln Leu Xaa Lys Xaa Xaa  
 130 135

&lt;210&gt; 1538

&lt;211&gt; 144

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (134)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (137)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1538

Tyr Gln Val Tyr Ser Lys Ile Gln Ala Thr Asn Thr Trp Leu Phe Leu  
 1 5 10 15

Ser Ser Cys Asn Gly Asn Glu Thr Ser Leu Trp Asp Cys Lys Asn Trp  
 20 25 30

Gln Trp Gly Gly Leu Thr Cys Asp His Tyr Glu Glu Ala Lys Ile Thr  
 35 40 45

Cys Ser Ala His Arg Glu Pro Arg Leu Val Gly Gly Asp Ile Pro Cys  
 50 55 60

Ser Gly Arg Val Glu Val Lys His Gly Asp Thr Trp Gly Ser Ile Cys  
 65 70 75 80

Asp Ser Asp Phe Ser Leu Glu Ala Ala Ser Val Leu Cys Arg Glu Leu  
 85 90 95

Gln Cys Gly Thr Val Val Ser Ile Leu Gly Gly Ala His Phe Gly Glu  
 100 105 110

Gly Met Asp Arg Ser Gly Leu Lys Asn Ser Ser Val Glu Gly His Glu  
 115 120 125

Ser Pro Ser Phe Ile Xaa Pro Val Xaa Thr Pro Pro Lys Arg Asn Leu  
 130 135 140

1606

&lt;210&gt; 1539

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1539

Asn Met Ala Gly Val Glu Glu Val Ala Ala Ser Gly Ser His Leu Asn  
1 5 10 15

Gly Asp Leu Asp Pro Asp Asp Arg Glu Glu Gly Ala Ala Ser Thr Ala  
20 25 30

Glu Glu Xaa Ala Lys Lys Lys Arg Arg Lys Lys Lys Lys Ser Lys Gly  
35 40 45

Pro Ser Ala Gly Lys Glu Ser Phe Met Phe Ser Gln Ser Pro Pro Gly  
50 55 60

Thr Ala Glu Leu Phe Gly Ser Gly Pro Leu Arg Gly Pro Gly Pro Gly  
65 70 75 80

Pro Gln Ser Pro Asp  
85

&lt;210&gt; 1540

&lt;211&gt; 36

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

1607

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (27)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1540

Gly	Val	Gly	Phe	Arg	Glu	Gly	Thr	Xaa	Gly	Ala	Gln	Thr	Gln	Arg	Ile
1				5				10					15		

Arg	Xaa	Arg	Val	Pro	Xaa	Asn	Trp	Lys	Met	Xaa	Phe	Glu	Pro	Ile	Ser
			20					25					30		

Ser	Thr	Lys	Phe
			35

<210> 1541

<211> 144

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (5)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (19)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (21)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (107)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

1608

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (131)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (132)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (143)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1541

Arg	Thr	Xaa	Ala	Xaa	Gly	Glu	Arg	Ala	Cys	Arg	Ser	Thr	Leu	Val	Asp
1				5				10					15		

Pro	Lys	Xaa	Val	Xaa	Thr	Val	Phe	Ser	Leu	Gly	Ala	Cys	Met	Glu	Gly
			20					25					30		

Leu	Asn	Ile	Leu	Leu	Asn	Arg	Leu	Leu	Gly	Ile	Ser	Leu	Tyr	Ala	Glu
	35					40						45			

Gln	Pro	Ala	Lys	Gly	Glu	Val	Trp	Ser	Glu	Asp	Val	Arg	Lys	Leu	Ala
	50					55					60				

Val	Val	His	Glu	Ser	Glu	Gly	Leu	Leu	Gly	Tyr	Ile	Tyr	Cys	Asp	Phe
65					70					75				80	

Phe	Gln	Arg	Ala	Asp	Lys	Pro	His	Gln	Asp	Cys	His	Phe	Thr	Ile	Arg
				85					90					95	

Gly	Gly	Arg	Leu	Lys	Gly	Arg	Trp	Glu	Thr	Xaa	Gln	Leu	Pro	Val	Val
			100					105					110		

Ser	Ser	Tyr	Ala	Gly	Ile	Phe	Pro	Val	Pro	Xaa	Arg	Glu	Phe	Ser	Asn
		115					120					125			

Phe	Gly	Xaa	Xaa	Leu	Gly	Met	Met	Gly	Lys	Pro	Phe	Pro	Gly	Xaa	Gly
	130					135					140				

1609

&lt;210&gt; 1542

&lt;211&gt; 145

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1542

Ala	Glu	Arg	Thr	Pro	Cys	Arg	Arg	Pro	Ala	Glu	Met	Leu	Arg	Leu	Pro
1				5					10					15	

Thr	Val	Phe	Arg	Gln	Met	Arg	Pro	Val	Ser	Arg	Val	Leu	Ala	Pro	His
			20					25					30		

Leu	Thr	Arg	Ala	Tyr	Ala	Lys	Xaa	Val	Lys	Phe	Gly	Ala	Asp	Ala	Arg
		35					40					45			

Ala	Leu	Met	Leu	Gln	Gly	Val	Asp	Leu	Leu	Ala	Asp	Ala	Val	Ala	Val
	50					55					60				

Thr	Met	Gly	Pro	Lys	Gly	Arg	Thr	Val	Ile	Ile	Glu	Gln	Ser	Trp	Gly
65					70					75					80

Ser	Pro	Lys	Val	Thr	Lys	Asp	Gly	Val	Thr	Val	Ala	Lys	Ser	Ile	Asp
			85						90					95	

Leu	Lys	Asp	Lys	Tyr	Lys	Asn	Ile	Gly	Ala	Lys	Leu	Val	Gln	Asp	Val
			100					105					110		

Ala	Asn	Asn	Thr	Asn	Glu	Glu	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	Thr
			115					120					125		

Val	Leu	Ala	Arg	Ser	Ile	Ala	Lys	Glu	Gly	Phe	Glu	Lys	Ile	Ser	Lys
	130					135					140				

Gly

145

&lt;210&gt; 1543

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1543

Lys	Phe	Gly	Ala	Asp	Ala	Arg	Ala	Leu	Met	Leu	Gln	Gly	Val	Asp	Leu
1					5					10				15	



1610

Leu Ala Asp Ala Val Ala Val Thr Met Gly Pro Lys Gly Arg Thr Val  
20 25 30

Ile Ile Glu Gln Ser Trp Gly Ser Pro Lys Val Thr Lys Asp Gly Val  
35 40 45

Thr Val Ala Lys Ser Ile Asp Leu Lys Asp Lys Tyr Lys Asn Ile Gly  
50 55 60

Ala Lys Leu Val Gln Asp Val Ala Asn Asn Thr Asn Glu Glu Ala Gly  
65 70 75 80

Asp Gly Thr Thr Thr Ala Thr Val Leu Ala Arg Ser Ile Ala Lys Glu  
85 90 95

Gly Phe Glu Lys Ile Ser Lys Gly Ala Asn Pro Val Glu Ile Arg Arg  
100 105 110

Gly Val Met Leu Ala Val Asp Ala Val Ile Ala Glu Leu Lys Lys Gln  
115 120 125

Ser Lys Pro Val Thr Thr Pro  
130 135

&lt;210&gt; 1544

&lt;211&gt; 84

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (68)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (77)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1611

&lt;400&gt; 1544

Cys Glu Phe Lys Arg Val Pro Gln Cys Pro Ser Gly Arg Val Tyr Val  
1 5 10 15

Leu Lys Phe Lys Ala Gly Ser Lys Arg Leu Phe Phe Trp Met Gln Glu  
20 25 30

Pro Lys Thr Asp Gln Asp Glu Glu His Cys Arg Lys Val Asn Glu Leu  
35 40 45

Ser Gly Thr Thr Pro Arg Cys Leu Gly His Trp Gly Pro Ala Glu Gln  
50 55 60

Arg Pro Arg Xaa Leu Cys Ala Xaa Arg Leu Arg Trp Xaa Ala Glu Xaa  
65 70 75 80

Ala Gly Glu Thr

&lt;210&gt; 1545

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1545

Tyr Leu Arg Leu Ile Tyr Ser Thr Ser Ile Thr Leu Leu Pro Ile Ser  
1 5 10 15

Asn Asn Val Lys Ile Lys  
20

&lt;210&gt; 1546

&lt;211&gt; 112

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1612

<220>  
<221> SITE  
<222> (51)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (56)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (57)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (64)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (67)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (70)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (82)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (85)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (100)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>

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1613

<221> SITE  
 <222> (102)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
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 <222> (103)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (107)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (108)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
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 <222> (110)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (111)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 1546  
 Pro Ser Ala Ala Ala Gly Asp Leu Gln Arg Thr Ala Ala Met Gly Ala  
   1                  5                  10                  15  
  
 His Leu Val Arg Arg Tyr Leu Gly Asp Ala Ser Val Xaa Pro Asp Pro  
           20                  25                  30  
  
 Leu Gln Met Pro Thr Phe Pro Pro Asp Tyr Gly Phe Pro Glu Arg Lys  
       35                  40                  45  
  
 Xaa Arg Xaa Met Val Ala Thr Xaa Xaa Xaa Met Met Asp Ala His Xaa  
   50                  55                  60  
  
 Ser Ser Xaa Cys Gly Xaa Thr Ala Pro Thr Asn Ser Ser Gly Cys Ser  
   65                  70                  75                  80  
  
 Ile Xaa Thr Leu Xaa Leu Pro Pro Leu Pro Trp Leu Ala Asn Gln Glu  
           85                  90                  95  
  
 Arg Asp Lys Xaa Glu Xaa Xaa Gln Thr Pro Xaa Xaa Phe Xaa Xaa Pro  
       100                  105                  110

1614

&lt;210&gt; 1547

&lt;211&gt; 142

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1547

Lys Val Ser Ala Val Met Ala Phe Leu Ala Ser Gly Pro Tyr Leu Thr  
 1 5 10 15

His Gln Gln Lys Val Leu Arg Leu Tyr Lys Arg Ala Leu Arg His Leu  
 20 25 30

Glu Ser Trp Cys Val Gln Arg Asp Lys Tyr Arg Tyr Phe Ala Cys Leu  
 35 40 45

Met Arg Ala Arg Phe Glu Glu His Lys Asn Glu Lys Asp Met Ala Lys  
 50 55 60

Ala Thr Gln Leu Leu Lys Glu Ala Glu Glu Glu Phe Trp Tyr Arg Gln  
 65 70 75 80

His Pro Gln Pro Tyr Ile Phe Pro Asp Ser Pro Gly Gly Thr Ser Tyr  
 85 90 95

Glu Arg Tyr Asp Cys Tyr Lys Val Pro Glu Trp Cys Leu Asp Asp Trp  
 100 105 110

His Pro Ser Glu Lys Ala Met Tyr Pro Asp Tyr Phe Ala Lys Arg Glu  
 115 120 125

Gln Trp Lys Lys Leu Arg Glu Gly Lys Leu Gly Thr Arg Gly  
 130 135 140

&lt;210&gt; 1548

&lt;211&gt; 98

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1615

<221> SITE  
<222> (9)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (22)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (32)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (36)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (45)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (62)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (65)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (66)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1616

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (84)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (92)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (97)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1548

Leu	Tyr	Tyr	Xaa	Leu	Gly	Phe	Leu	Xaa	Leu	Xaa	Xaa	Arg	Leu	Pro	Leu
1				5				10					15		

Asp	Ala	Ala	Lys	Arg	Xaa	His	Asp	Glu	Leu	Gly	Asn	Glu	Arg	Pro	Xaa
			20					25					30		

Ala	Tyr	Met	Xaa	Glu	His	Asn	Gln	Leu	Asn	Gly	Trp	Xaa	Ser	Asp	Glu
			35				40					45			

Asn	Asp	Trp	Asn	Glu	Lys	Leu	Tyr	Pro	Val	Trp	Lys	Arg	Xaa	Asp	Met
	50					55					60				

Xaa	Xaa	Glu	Lys	Leu	Leu	Glu	Gly	Arg	Pro	Val	Cys	Lys	Ala	Val	Leu
	65				70					75					80

Thr	Xaa	Asp	Xaa	Pro	Thr	Leu	Gly	Gly	Leu	Lys	Xaa	Asn	Ile	Xaa	Arg
				85					90					95	

Xaa Thr

&lt;210&gt; 1549

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1617

<220>  
<221> SITE  
<222> (60)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (72)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (73)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (122)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (123)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (128)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (136)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1549  
Gly Cys Ser Leu Glu Gln Arg Ser Phe Ile Ser Val Arg Leu Leu Ser  
1 5 10 15  
Tyr Leu Ser Ala Cys Arg His Pro Met Glu Asp Ser Met Asp Met Asp  
20 25 30  
Met Ser Pro Leu Arg Pro Gln Asn Tyr Leu Phe Gly Cys Glu Leu Lys  
35 40 45  
Ala Asp Lys Asp Tyr His Phe Lys Val Asp Asn Xaa Glu Asn Glu His  
50 55 60  
Gln Leu Ser Leu Arg Thr Val Xaa Xaa Gly Ala Gly Ala Lys Asp Glu  
65 70 75 80



1618

Leu His Ile Val Glu Ala Glu Ala Met Asn Tyr Glu Gly Ser Pro Ile  
85 90 95

Lys Val Thr Leu Ala Thr Leu Lys Met Ser Val Gln Pro Thr Val Phe  
100 105 110

Pro Leu Gly Ala Leu Asn Asn Thr Thr Xaa Xaa Leu Lys Val Glu Xaa  
115 120 125

Trp Phe Arg Ala Met Pro Ile Xaa Gly Gln  
130 135

&lt;210&gt; 1550

&lt;211&gt; 51

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1550

Thr Leu Ala Phe Phe Leu Ile Pro Cys Ile Gly Ser Pro Ala Cys Pro  
1 5 10 15

Thr Met Ser Asp Ala Ala Val Asp Thr Ser Ser Glu Ile Thr Thr Lys  
20 25 30

Asp Leu Lys Glu Lys Lys Glu Val Val Glu Glu Ala Glu Met Glu Glu  
35 40 45

Thr Pro Cys  
50

&lt;210&gt; 1551

&lt;211&gt; 73

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1619

<221> SITE  
<222> (27)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (37)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (63)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (67)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1551  
Lys Ala Xaa Ser Val Xaa Leu Tyr Lys Val Arg Leu Gln Val Pro Val  
1 5 10 15  
Arg Asn Ser Arg Val Asp Pro Arg Val Arg Xaa Gly Gly Glu Gln Val  
20 25 30  
Ser Ser Thr Ile Xaa Gly Leu Ser Gly Pro Pro Ser Arg Arg Gly Pro  
35 40 45  
Phe Pro Leu Ala Trp Val Ile Leu Phe Leu Leu Glu Ala Gln Xaa Gly  
50 55 60  
Pro Trp Xaa Leu Leu Pro Ser Ala His  
65 70

<210> 1552  
<211> 131  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (4)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (5)  
<223> xaa equals any of the naturally occurring L-amino acids

1620

<220>  
 <221> SITE  
 <222> (96)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (104)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (114)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (115)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (119)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (124)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (129)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1552

Asn	Ser	Ala	Xaa	Xaa	Glu	Leu	Leu	Thr	Gln	Pro	Gly	Asp	Trp	Thr	Leu
1				5					10					15	

Phe	Val	Pro	Thr	Asn	Asp	Ala	Phe	Lys	Gly	Met	Thr	Ser	Glu	Glu	Lys
			20					25					30		

Glu	Ile	Leu	Ile	Arg	Asp	Lys	Asn	Ala	Leu	Gln	Asn	Ile	Ile	Leu	Tyr
	35						40					45			

His	Leu	His	Gln	Glu	Phe	Ser	Leu	Glu	Lys	Asp	Leu	Asn	Leu	Val	Leu
	50					55					60				

Leu	Thr	Phe	Leu	Lys	Thr	Thr	Gln	Gly	Ser	Lys	Ile	Phe	Leu	Glu	Gly
65					70					75				80	

1621

Ser Glu Met Val Thr Leu Leu Val Asn Gly Phe Gly Asn Pro Lys Xaa  
                             85                            90                            95

Ser Asp Ile His Gly Pro Pro Xaa Val Val Ile Ser Cys Cys Arg Leu  
                             100                            105                            110

Asn Xaa Xaa Phe Pro Ala Xaa Thr Pro Phe Gly Xaa Gly Ser Thr Gly  
                             115                            120                            125

Xaa Asp Thr  
                             130

<210> 1553

<211> 106

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (3)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (55)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (94)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (103)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1553

Trp Ile Xaa Arg Ala Ala Gly Ile Arg His Glu Val Ala Asp Thr Met  
       1                            5                            10                            15

Leu Pro Pro Met Ala Leu Pro Ser Val Ser Trp Met Leu Leu Ser Cys  
                             20                            25                            30

Leu Met Leu Leu Ser Gln Val Gln Gly Glu Glu Pro Gln Arg Glu Leu  
                             35                            40                            45

Pro Ser Ala Arg Ile Arg Xaa Pro Lys Gly Ser Lys Ala Tyr Gly Ser

1622

50                      55                      60  
 His Cys Tyr Ala Leu Phe Leu Ser Pro Lys Ser Trp Thr Asp Ala Asp  
 65                      70                      75                      80  
 Leu Ala Cys Gln Lys Arg Pro Ser Gly Asn Leu Val Ser Xaa Leu Ser  
                     85                      90                      95  
 Gly Ala Glu Gly Ser Phe Xaa Pro Pro Trp  
                     100                      105

&lt;210&gt; 1554

&lt;211&gt; 117

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (109)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1554

Ala Thr Phe Pro Arg Glu Trp Leu Cys Asp Arg His Leu Arg Glu Lys  
 1                      5                      10                      15  
 Met Phe Ser Ser Val Ala His Leu Ala Arg Ala Asn Pro Phe Asn Thr  
                     20                      25                      30  
 Pro His Leu Gln Leu Val His Asp Gly Leu Gly Asp Leu Arg Ser Ser  
                     35                      40                      45  
 Ser Pro Gly Pro Thr Gly Gln Pro Arg Arg Pro Arg Asn Leu Ala Ala  
                     50                      55                      60  
 Ala Ala Val Glu Glu Gln Tyr Ser Cys Asp Tyr Gly Ser Gly Arg Phe  
 65                      70                      75                      80  
 Phe Ile Leu Cys Gly Leu Gly Gly Ile Ile Ser Cys Gly Thr Thr His  
                     85                      90                      95  
 Thr Ala Leu Val Pro Leu Asp Leu Val Lys Cys Arg Xaa Arg Phe Val  
                     100                      105                      110  
 Phe Ala Cys Trp Thr  
                     115

&lt;210&gt; 1555

1623

<211> 164  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SITE  
 <222> (79)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (86)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<220>  
 <221> SITE  
 <222> (125)  
 <223> Xaa equals any of the naturally occurring L-amino acids

<400> 1555

Glu Lys Lys Val Glu Arg Gln Thr Glu Leu Lys Arg Lys Phe Glu Gln  
 1 5 10 15

Met Lys Gln Asp Arg Ile Thr Arg Tyr Gln Gly Val Asn Leu Tyr Val  
 20 25 30

Lys Asn Leu Asp Asp Gly Ile Asp Asp Glu Arg Leu Arg Lys Glu Phe  
 35 40 45

Ser Pro Phe Gly Thr Ile Thr Ser Ala Lys Val Met Met Glu Gly Gly  
 50 55 60

Arg Ser Lys Gly Phe Gly Phe Val Cys Phe Ser Ser Pro Glu Xaa Ala  
 65 70 75 80

Thr Lys Ala Val Thr Xaa Met Asn Gly Arg Ile Val Ala Thr Lys Pro  
 85 90 95

Leu Tyr Val Ala Leu Ala Gln Arg Lys Glu Glu Arg Gln Ala His Leu  
 100 105 110

Thr Asn Gln Tyr Met Gln Arg Met Ala Ser Val Arg Xaa Val Pro Asn  
 115 120 125

Pro Val Ile Asn Pro Tyr Gln Pro Ala Pro Pro Ser Gly Tyr Phe Met  
 130 135 140

Ala Ala Ile Pro Gln Thr Gln Asn Val Leu His Thr Ile Leu Leu Ala  
 145 150 155 160

Lys Leu Leu Asn

1624

<210> 1556  
<211> 166  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (2)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (7)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (9)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (13)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (14)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1625

&lt;222&gt; (150)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (157)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1556

Xaa Xaa Leu Thr Leu Thr Xaa Gly Xaa Lys Xaa Xaa Xaa Xaa Thr Ala  
 1 5 10 15

Val Ala Ala Ala Leu Ala Thr Ser Gly Ser Pro Gly Pro Val Arg Asn  
 20 25 30

Ser Ala Arg Ala Gly Thr Ser Glu Phe Leu Asn Lys Val Thr Glu Ala  
 35 40 45

Gln Glu Asp Gly Gln Ser Thr Ser Glu Leu Ile Gly Gln Phe Gly Val  
 50 55 60

Gly Phe Tyr Ser Ala Phe Leu Val Ala Asp Lys Val Ile Val Thr Ser  
 65 70 75 80

Lys His Asn Asn Asp Thr Gln His Ile Trp Glu Ser Asp Ser Asn Glu  
 85 90 95

Phe Ser Val Ile Ala Asp Pro Arg Gly Asn Thr Leu Gly Arg Gly Thr  
 100 105 110

Thr Ile Thr Leu Val Leu Lys Glu Glu Ala Ser Asp Tyr Leu Glu Leu  
 115 120 125

Asp Thr Ile Lys Asn Leu Val Lys Lys Tyr Ser Gln Phe Ile Asn Phe  
 130 135 140

Pro Ile Tyr Val Trp Xaa Ser Lys Thr Glu Thr Val Xaa Glu Pro Met  
 145 150 155 160

Glu Glu Glu Gly Ala Ala  
 165

&lt;210&gt; 1557

&lt;211&gt; 127

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE



1626

<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (19)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (20)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (21)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (82)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (83)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (90)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (95)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (97)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (103)

1627

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (106)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (107)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (108)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (113)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (117)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (120)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1557

Xaa Asn Val Val Glu Ala Gln Phe Asp Ser Arg Val Arg Ala Thr Gly  
1 5 10 15

His Ser Xaa Xaa Xaa Tyr Asn Lys Trp Glu Thr Ile Glu Ala Trp Thr  
20 25 30

Gln Gln Val Ala Thr Xaa Asn Pro Ala Leu Ile Ser Arg Ser Val Ile  
35 40 45

Gly Thr Thr Phe Glu Gly Arg Ala Ile Tyr Leu Leu Lys Val Gly Lys  
50 55 60

Ala Gly Gln Asn Lys Pro Ala Ile Phe Met Asp Cys Gly Phe Pro Met  
65 70 75 80

Pro Xaa Xaa Trp Ile Ser Pro Cys Ile Xaa Pro Val Gly Phe Xaa Lys  
85 90 95

1628

Xaa Ala Val Pro Phe Leu Xaa Thr Phe Xaa Xaa Xaa Leu Thr Asn Phe  
                   100                  105                  110

Xaa Asn Asn Leu Xaa Phe Tyr Xaa Pro Ala Leu Trp Pro Gln Tyr  
                   115                  120                  125

&lt;210&gt; 1558

&lt;211&gt; 109

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (101)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (107)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1558

Lys Ala Gly Ala Ala Ala Gly Gly Pro Gly Val Ser Gly Val Cys Val  
   1                  5                  10                  15

Cys Lys Ser Arg Tyr Pro Val Cys Gly Ser Asp Gly Thr Thr Tyr Pro  
                   20                  25                  30

Ser Gly Cys Gln Leu Arg Ala Ala Ser Gln Arg Ala Glu Ser Arg Gly  
                   35                  40                  45

Glu Lys Ala Ile Thr Gln Val Ser Lys Gly Thr Cys Glu Gln Gly Pro  
                   50                  55                  60

Ser Ile Val Thr Pro Pro Lys Asp Ile Trp Asn Val Thr Gly Ala Xaa  
   65                  70                  75                  80

Val Tyr Leu Ser Cys Glu Val Ile Gly Ile Pro Thr Pro Val Leu Ile  
                   85                  90                  95

1629

Trp Asn Lys Val Xaa Arg Gly His Tyr Gly Xaa Xaa Arg  
                   100                  105

&lt;210&gt; 1559

&lt;211&gt; 102

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1559

Gly Leu Arg Gly His Leu Arg Ser Ser Gly Ser Ser Ile Trp Asn Tyr  
   1                  5                  10                  15

Ile Lys Phe Arg Lys His Val Ser Arg Tyr Asp Ser Arg Thr Thr Ile  
                   20                  25                  30

Phe Ser Pro Glu Gly Arg Leu Tyr Gln Val Glu Tyr Ala Met Glu Ala  
                   35                  40                  45

Ile Gly His Ala Gly Thr Cys Leu Gly Ile Leu Ala Asn Asp Gly Val  
                   50                  55                  60

Leu Leu Ala Ala Glu Arg Arg Asn Ile His Lys Leu Leu Asp Glu Val  
   65                  70                  75                  80

Phe Phe Ser Glu Lys Ile Tyr Lys Leu Asn Glu Asp Met Ala Cys Ser  
                   85                  90                  95

Val Ala Gly Ile Thr Phe  
                   100

&lt;210&gt; 1560

&lt;211&gt; 159

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (146)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1560

Ser Thr His Ala Ser Ala Ala His Pro Ser Thr Leu Thr His Pro Gln  
   1                  5                  10                  15

Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr Thr Pro Glu Pro Asp  
                   20                  25                  30

1630

Lys Pro Arg Pro Met Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr  
35 40 45

Ser Asp Pro Glu Glu Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp  
50 55 60

Asn Leu Leu Ile Ala Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser  
65 70 75 80

Val Arg Gln Gly Val Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala  
85 90 95

Ile Lys Val Leu Lys Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met  
100 105 110

Met Arg Glu Ala Gln Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val  
115 120 125

Arg Leu Ile Gly Val Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu  
130 135 140

Met Xaa Gly Ala Gly Ala Ala Gln Val Pro Gly Arg Gln Glu Gly  
145                      150                      155

<210> 1561

<211> 155

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (139)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

**<222> (140)**

<223> Xaa equals any of the naturally occurring L-amino acids

**<400> 1561**

Arg Ala His Glu Asn Glu Ile Thr Lys Val Arg Lys Val Thr Phe Asn  
1 5 10 15

Gly Leu Asn Gln Met Ile Val Ile Glu Leu Gly Thr Asn Pro Leu Lys  
20 25 30

Ser Ser Gly Ile Glu Asn Gly Ala Phe Gln Gly Met Lys Lys Leu Ser  
35 40 45

1631

Tyr Ile Arg Ile Ala Asp Thr Asn Ile Thr Ser Ile Pro Gln Gly Leu  
 50 55 60  
 Pro Pro Ser Leu Thr Glu Leu His Leu Asp Gly Asn Lys Ile Ser Arg  
 65 70 75 80  
 Val Asp Ala Ala Ser Leu Lys Gly Leu Asn Asn Leu Ala Lys Leu Gly  
 85 90 95  
 Leu Ser Phe Asn Ser Ile Ser Ala Val Asp Asn Gly Ser Leu Ala Asn  
 100 105 110  
 Thr Pro His Leu Arg Glu Leu His Leu Asp Asn Asn Lys Leu Thr Arg  
 115 120 125  
 Val Pro Gly Gly Leu Gln Ser Ile Lys Tyr Xaa Xaa Gly Gly Tyr Leu  
 130 135 140  
 His Asn Asn His Ile Ser Val Val Gly Ser Lys  
 145 150 155

&lt;210&gt; 1562

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1562

Xaa Asn Gln Asn Ser Asn Gly Leu Val Phe Leu Leu Trp Gly Ser Tyr  
 1 5 10 15  
 Ala Gln Lys Lys Gly Ser Ala Ile Asp Arg Lys Arg His His Val Leu  
 20 25 30  
 Gln Thr Ala His Pro Ser Pro Leu Ser Val Tyr Arg Gly Phe Phe Gly  
 35 40 45  
 Cys Arg His Phe Ser Lys Thr Asn Glu Leu Leu Gln Lys Ser Gly Lys  
 50 55 60  
 Lys Pro Ile Asp Trp Lys Glu Leu  
 65 70

1632

&lt;210&gt; 1563

&lt;211&gt; 110

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (74)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1563

Arg	Thr	Arg	Gly	Arg	Leu	Leu	Gly	His	Leu	Lys	Glu	Thr	Trp	Gly	His
1				5					10					15	

Pro	Arg	Arg	Ala	Ser	Trp	Val	Val	Arg	Ser	Arg	Arg	Cys	Arg	His	Cys
			20					25					30		

Leu	Cys	Phe	Met	Arg	Lys	Met	Leu	Ala	Ala	Val	Ser	Arg	Val	Leu	Ser
		35					40					45			

Gly	Ala	Ser	Gln	Lys	Pro	Ala	Ser	Arg	Val	Leu	Val	Ala	Ser	Arg	Asn
	50					55					60				

Phe	Ala	Asn	Asp	Ala	Thr	Phe	Glu	Ile	Xaa	Lys	Cys	Asp	Leu	His	Arg
65					70					75				80	

Leu	Glu	Glu	Ala	Leu	Leu	Ser	Gln	Gln	Cys	Ser	Pro	Arg	Glu	Asp	Gly
				85					90					95	

Leu	Lys	Tyr	Tyr	Arg	Met	Met	Xaa	Thr	Val	Pro	Glu	Trp	Asn
				100				105					110

&lt;210&gt; 1564

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1633

&lt;221&gt; SITE

&lt;222&gt; (38)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (61)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (70)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (92)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (94)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1564

Leu His Ser Xaa Cys Thr Arg Arg Gly Ser Gly Ser Leu Arg Leu Cys  
1 5 10 15

Ser Val Ala Arg Val Gly Gln Arg Arg Met Thr Ser Ala Ala Met Ser  
20 25 30

Lys Pro His Ser Glu Xaa Gly Thr Ala Phe Ile Gln Thr Gln Xaa Leu  
35 40 45

His Ala Xaa Met Ala Asp Thr Phe Leu Glu His Met Xaa Arg Leu Asp  
50 55 60



1634

Ile Asp Ser Pro Pro Xaa Thr Gly Arg Asn Thr Gly Ile Ile Cys Thr  
 65 70 75 80

Ile Gly Pro Ala Ser Arg Ser Xaa Gly Asp Gly Xaa Gly Xaa Asp  
 85 90 95

&lt;210&gt; 1565

&lt;211&gt; 50

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1565

Pro Thr Met Ala Ala Ile Arg Lys Lys Leu Val Ile Val Gly Asp Gly  
 1 5 10 15

Ala Cys Gly Lys Thr Cys Leu Leu Ile Val Phe Ser Xaa Asp Gln Phe  
 20 25 30

Pro Glu Val Tyr Xaa Pro Thr Val Leu Xaa Glu Leu Tyr Cys Ala His  
 35 40 45

Xaa Gly  
 50

&lt;210&gt; 1566

&lt;211&gt; 161

1635

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (155)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1566

Ala Ala Met Phe Asn Ile Arg Asn Ile Gly Lys Thr Leu Val Thr Arg  
 1 5 10 15

Thr Gln Gly Thr Lys Ile Ala Ser Asp Gly Leu Lys Gly Arg Val Phe  
 20 25 30

Glu Val Ser Leu Ala Asp Leu Gln Asn Asp Glu Val Ala Phe Arg Lys  
 35 40 45

Phe Lys Leu Ile Thr Glu Asp Val Gln Gly Lys Asn Cys Leu Thr Asn  
 50 55 60

Phe His Gly Met Asp Leu Thr Arg Asp Lys Met Cys Ser Met Val Lys  
 65 70 75 80

Lys Trp Gln Thr Met Ile Glu Ala His Val Asp Val Lys Thr Thr Asp  
 85 90 95

Gly Tyr Leu Leu Arg Leu Phe Cys Val Gly Phe Thr Lys Lys Arg Asn  
 100 105 110

Asn Gln Ile Arg Lys Thr Ser Tyr Ala Gln His Gln Gln Val Arg Gln  
 115 120 125

Ile Arg Lys Lys Met Met Glu Ile Met Thr Arg Glu Val Gln Thr Asn  
 130 135 140

Asp Leu Lys Glu Val Val Asn Lys Leu Ile Xaa Asp Ala Leu Glu Lys  
 145 150 155 160

Thr

&lt;210&gt; 1567

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1567

Pro Ser Leu Lys Gly Thr Lys Ala Gly Ala Pro Pro Arg Cys Gly Arg

1636

```

      1             5             10             15
Ser Arg Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Gly Thr Ser Pro
      20             25             30
Gly Pro Arg Gln Ser Pro Ala Arg Leu Val Ala Met Pro Arg Lys Ile
      35             40             45
Glu Glu Ile Lys Asp Phe Leu Leu Thr Ala Arg Arg Lys Asp Ala Lys
      50             55             60
Ser Val Lys Ile Lys Lys Asn Lys Asp Asn Val Lys Phe Lys Val Arg
      65             70             75             80
Cys Ser Arg Tyr Leu Tyr Thr Leu Val Ile Thr Asp Lys Glu Lys Ala
      85             90             95
Glu Lys Leu Lys Gln Ser Leu Pro Pro Gly Leu Ala Val Lys Glu Leu
      100            105            110
Lys

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&lt;210&gt; 1568

&lt;211&gt; 48

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1568

```

Gly Cys Asn Tyr Gly Lys Pro Xaa His His Gly Val Asn Gln Leu Lys
  1             5             10             15

```

```

Phe Ala Arg Ser Leu Gln Ser Xaa Ala Glu Glu Arg Ala Gly Arg His
      20             25             30

```

1637

Xaa Gly Ala Leu Arg Val Leu Asn Ser Tyr Trp Val Gly Glu Asp Ser  
                   35                                  40                                  45

&lt;210&gt; 1569

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (106)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1569

Gly Thr Ser Glu Arg Xaa Glu His Ala Met Lys Ala Ser Gly Thr Leu  
   1                  5                                  10                                  15

Arg Glu Tyr Lys Val Val Gly Arg Cys Leu Pro Thr Pro Lys Cys His  
                   20                                  25                                  30

Thr Pro Pro Leu Tyr Arg Met Arg Ile Phe Ala Pro Asn His Val Val  
                   35                                  40                                  45

Ala Lys Ser Arg Phe Trp Tyr Phe Val Ser Gln Leu Lys Lys Met Lys  
   50                                  55                                  60

Lys Ser Ser Gly Glu Ile Val Tyr Cys Gly Gln Val Phe Glu Lys Ser  
   65                                  70                                  75                                  80

Pro Leu Arg Val Lys Asn Phe Gly Ile Trp Leu Arg Tyr Asp Ser Arg  
                   85                                  90                                  95

Ser Gly Thr His Asn Met Xaa Arg Glu Xaa Arg Asp Leu Thr Asn Ala  
                   100                                  105                                  110

1638

Gly Ala Val Asn Gln Cys Asn Gly  
           115                  120

&lt;210&gt; 1570

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (61)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1570

Cys Pro Pro Leu Trp Gln Glu Glu Val Trp Leu Asp Pro Asn Glu Thr  
   1                  5                  10                  15

Asn Glu Ile Ala Asn Ala Asn Ser Arg Gln Gln Ile Arg Lys Leu Ile  
                   20                  25                  30

Lys Asp Gly Leu Ile Ile Arg Lys Pro Val Thr Val His Ser Arg Ala  
           35                  40                  45

Arg Cys Arg Lys Asn Thr Leu Ala Arg Arg Lys Gly Xaa His Met Gly  
       50                  55                  60

Ile Val Ser Gly Lys Val Gln Pro Met Pro Glu Cys Gln Xaa Arg Ser  
   65                  70                  75                  80

His Gly Leu Arg Lys  
                   85

&lt;210&gt; 1571

&lt;211&gt; 135

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (134)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1639

&lt;400&gt; 1571

Phe Ala Lys Met Thr Asn Thr Lys Gly Lys Arg Arg Gly Thr Arg Tyr  
1 5 10 15

Met Phe Ser Arg Pro Phe Arg Lys His Gly Val Val Pro Leu Ala Thr  
20 25 30

Tyr Met Arg Ile Tyr Lys Lys Gly Asp Ile Val Asp Ile Lys Gly Met  
35 40 45

Gly Thr Val Gln Lys Gly Met Pro His Lys Cys Tyr His Gly Lys Thr  
50 55 60

Gly Arg Val Tyr Asn Val Thr Gln His Ala Val Gly Ile Val Val Asn  
65 70 75 80

Lys Gln Val Lys Gly Lys Ile Leu Ala Lys Arg Ile Asn Val Arg Ile  
85 90 95

Glu His Ile Lys His Ser Lys Ser Arg Asp Ser Phe Leu Lys Arg Val  
100 105 110

Lys Glu Asn Asp Gln Lys Lys Lys Glu Ala Lys Glu Lys Gly Thr Trp  
115 120 125

Val Gln Leu Lys Arg Xaa Pro  
130 135

&lt;210&gt; 1572

&lt;211&gt; 71

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1640

<221> SITE  
<222> (16)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (23)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (27)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (30)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (37)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (42)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (65)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (69)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1572  
Thr Ala Thr Pro Ala Asn Xaa Xaa Leu Pro Trp Gly Xaa Lys Lys Xaa  
1 5 10 15  
Ala Arg Arg Ser Lys Ile Xaa Ser Phe Val Xaa Val Cys Xaa Tyr Asn  
20 25 30

1641

His Leu Met Pro Xaa Arg Tyr Ser Val Xaa Tyr Ser Pro Trp Gly Lys  
                   35                  40                  45

Ala Val Arg Ser Leu Gly Cys Leu Pro Xaa Phe Leu Ala Leu Lys Arg  
           50                  55                  60

Xaa Ala Arg Arg Xaa Pro Arg  
   65                  70

&lt;210&gt; 1573

&lt;211&gt; 68

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (59)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (62)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1573

Ala Ala Ala Lys Gly Ala Ala Ala Met Ser Ala His Leu Gln Trp Met  
   1                  5                  10                  15

Val Val Arg Asn Cys Ser Ser Phe Leu Ile Lys Arg Asn Lys Gln Thr  
           20                  25                  30

Tyr Ser Thr Glu Pro Asn Asn Leu Lys Ala Arg Asn Ser Phe Arg Tyr  
           35                  40                  45

Asn Gly Leu Ile His Arg Lys Thr Val Gly Xaa Glu Pro Xaa Ala Asp  
           50                  55                  60

Gly Lys Xaa Val  
   65

&lt;210&gt; 1574

&lt;211&gt; 127



1642

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1574

Gly Arg Met Xaa Pro Ala Lys Lys Gly Gly Glu Lys Lys Lys Gly Arg  
 1 5 10 15

Ser Ala Ile Asn Glu Val Val Thr Arg Glu Tyr Thr Ile Asn Ile His  
 20 25 30

Lys Arg Ile His Gly Val Gly Phe Lys Lys Arg Ala Pro Arg Ala Leu  
 35 40 45

Lys Glu Ile Arg Lys Phe Ala Met Lys Glu Met Gly Thr Pro Asp Val  
 50 55 60

Arg Ile Asp Thr Arg Leu Asn Lys Ala Val Trp Ala Lys Gly Ile Arg  
 65 70 75 80

Asn Val Pro Tyr Arg Ile Arg Val Arg Leu Ser Arg Lys Arg Asn Glu  
 85 90 95

Asp Glu Asp Ser Pro Asn Lys Leu Tyr Thr Leu Val Thr Tyr Val Pro  
 100 105 110

Val Thr Thr Phe Lys Asn Leu Gln Thr Val Asn Val Asp Glu Asn  
 115 120 125

&lt;210&gt; 1575

&lt;211&gt; 115

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (12)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1643

<221> SITE  
 <222> (18)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (29)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (40)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (49)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (65)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (82)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <220>  
 <221> SITE  
 <222> (97)  
 <223> Xaa equals any of the naturally occurring L-amino acids  
  
 <400> 1575  
 Trp Phe Pro Arg Ala Ala Gly Phe Arg His Xaa Xaa Val Gln Ile Arg  
   1                  5                  10                  15  
  
 Ala Xaa Glu Arg Lys Gly Thr Ser Ser Phe Gly Lys Xaa Arg Asn Lys  
                   20                  25                  30  
  
 Thr His Thr Leu Cys Arg Arg Xaa Gly Ser Lys Ala Tyr His Leu Gln  
       35                  40                  45  
  
 Xaa Ser Thr Cys Gly Lys Phe Gly Tyr Pro Ala Lys Arg Lys Arg Lys  
   50                  55                  60  
  
 Xaa Asn Trp Ser Ala Lys Ala Lys Arg Arg Asn Thr Thr Gly Thr Gly  
   65                  70                  75                  80  
  
 Arg Xaa Arg His Leu Lys Phe Val Tyr Arg Arg Phe Arg His Gly Phe

1644

	85		90		95
Xaa	Glu	Gly	Thr	Thr	Pro
				Lys	Pro
				Lys	Arg
				Ala	Ala
				Val	Ala
				Ala	Ser
	100		105		110
Ser	Ser	Ser			
	115				

&lt;210&gt; 1576

&lt;211&gt; 121

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (108)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (114)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (116)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1576

Gly	Arg	Arg	Ser	Glu	Met	Thr	Lys	Gly	Thr	Ser	Ser	Phe	Gly	Lys	Arg
1				5					10					15	

Arg	Asn	Lys	Thr	His	Thr	Leu	Cys	Arg	Arg	Cys	Gly	Ser	Lys	Ala	Tyr
		20						25					30		

His	Leu	Gln	Lys	Ser	Thr	Cys	Gly	Lys	Cys	Gly	Tyr	Pro	Ala	Lys	Arg
		35					40					45			

Lys	Arg	Lys	Tyr	Asn	Trp	Ser	Ala	Lys	Ala	Lys	Arg	Arg	Asn	Thr	Thr
	50					55					60				

Gly	Thr	Gly	Arg	Met	Arg	His	Leu	Lys	Ile	Val	Tyr	Arg	Arg	Phe	Arg
65					70					75				80	

His	Gly	Phe	Arg	Glu	Gly	Thr	Thr	Pro	Lys	Pro	Lys	Arg	Ala	Ala	Val
				85					90					95	

Ala	Ala	Phe	Gln	Phe	Ile	Phe	Lys	Asn	Val	Asn	Xaa	Phe	Ser	His	Ala
			100					105					110		

1645

Ile Xaa Cys Xaa Gly Val Leu Lys Asn  
115 120

&lt;210&gt; 1577

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (57)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (59)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (61)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1577

Gly Ile Val Gly Lys Tyr Gly Thr Arg Tyr Gly Ala Ser Leu Arg Lys  
1 5 10 15

Met Val Lys Lys Ile Glu Ile Ser Gln His Ala Lys Tyr Thr Cys Ser  
20 25 30

Phe Cys Gly Lys Thr Lys Met Lys Arg Arg Ala Val Gly Ile Trp His  
35 40 45

Cys Gly Ser Cys Met Lys Thr Val Xaa Gly Xaa Ala Xaa  
50 55 60

&lt;210&gt; 1578

&lt;211&gt; 74

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1646

<220>  
<221> SITE  
<222> (44)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (51)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (63)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (67)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (74)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1578  
Glu Leu Gly Lys Gly Lys Met Glu Lys Pro Ser Pro Tyr Pro Ala Gln  
1 5 10 15  
Gly Pro Cys Ile Ile Tyr Asn Glu Asp Asn Gly Ile Ile Lys Ala Phe  
20 25 30  
Gln Lys His Pro Trp Asn Tyr Ser Ala Xaa Met Xaa Ser Lys Leu Lys  
35 40 45  
His Phe Xaa Ser Leu Leu Pro Gly Gly Ala Cys Gly Asp Val Xaa Gly  
50 55 60  
Ile Gly Xaa Glu Met Ala Phe Pro Gly Xaa  
65 70

<210> 1579  
<211> 98  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (2)

1647

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (81)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (87)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (91)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1579

Ser Xaa Met Ala Cys Ala Arg Pro Leu Ile Ser Val Tyr Ser Glu Lys  
1 5 10 15

Gly Glu Ser Ser Gly Lys Asn Val Thr Leu Pro Ala Val Phe Lys Ala  
20 25 30

Pro Ile Arg Pro Asp Ile Val Asn Phe Val His Thr Asn Leu Arg Lys  
35 40 45

Asn Asn Arg Gln Pro Tyr Ala Val Ser Glu Leu Ala Gly His Gln Thr  
50 55 60

Ser Ala Glu Ser Trp Gly Thr Gly Arg Ala Val Ala Arg Ile Pro Arg  
65 70 75 80

Xaa Arg Gly Gly Gly Thr Xaa Arg Ser Gly Xaa Gly Ala Phe Gly Asn  
85 90 95

Met Cys

<210> 1580

<211> 72

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (4)

<223> Xaa equals any of the naturally occurring L-amino acids

1648

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (50)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (55)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1580

Leu	Ser	Leu	Xaa	Gly	Lys	Lys	Lys	Lys	Arg	Leu	Arg	Val	Asp	Lys	Trp
1				5					10					15	

Trp	Gly	Xaa	Arg	Lys	Glu	Leu	Ala	Thr	Val	Arg	Thr	Ile	Cys	Ser	His
			20					25					30		

Val	Gln	Asn	Met	Ile	Lys	Gly	Val	Thr	Leu	Gly	Phe	Arg	Tyr	Lys	Met
		35					40					45			

Arg	Xaa	Val	Tyr	Ala	His	Xaa	Pro	Ile	Asn	Val	Val	Ile	Gln	Glu	Xaa
	50					55						60			

Gly	Ser	Ile	Val	Glu	Ile	Xaa	Xaa
65					70		

&lt;210&gt; 1581

&lt;211&gt; 153

&lt;212&gt; PRT

1649

&lt;213&gt; Homo sapiens

&lt;400&gt; 1581

Ala	Ile	Met	Gly	Arg	Met	His	Ala	Pro	Gly	Lys	Gly	Leu	Ser	Gln	Ser
1				5					10				15		

Ala	Leu	Pro	Tyr	Arg	Arg	Ser	Val	Pro	Thr	Trp	Leu	Lys	Leu	Thr	Ser
			20					25					30		

Asp	Asp	Val	Lys	Glu	Gln	Ile	Tyr	Lys	Leu	Ala	Lys	Lys	Gly	Leu	Thr
		35					40					45			

Pro	Ser	Gln	Ile	Gly	Val	Ile	Leu	Arg	Asp	Ser	His	Gly	Val	Ala	Gln
	50					55					60				

Val	Arg	Phe	Val	Thr	Gly	Asn	Lys	Ile	Leu	Arg	Ile	Leu	Lys	Ser	Lys
65					70					75					80

Gly	Leu	Ala	Pro	Asp	Leu	Pro	Glu	Asp	Leu	Tyr	His	Leu	Ile	Lys	Lys
				85					90					95	

Ala	Val	Ala	Val	Arg	Lys	His	Leu	Glu	Arg	Asn	Arg	Lys	Asp	Lys	Asp
			100					105					110		

Ala	Lys	Phe	Arg	Leu	Ile	Leu	Ile	Glu	Ser	Arg	Ile	His	Arg	Leu	Ala
		115					120					125			

Arg	Tyr	Tyr	Lys	Thr	Lys	Arg	Val	Leu	Pro	Pro	Asn	Trp	Lys	Tyr	Glu
	130					135						140			

Ser	Ser	Thr	Ala	Ser	Ala	Leu	Val	Ala
145					150			

&lt;210&gt; 1582

&lt;211&gt; 129

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1582

Gly	Pro	Ala	Asn	Met	Gly	Arg	Val	Arg	Thr	Lys	Thr	Val	Lys	Lys	Ala
1				5					10				15		

Ala	Arg	Val	Ile	Ile	Glu	Lys	Tyr	Tyr	Thr	Arg	Leu	Gly	Asn	Asp	Phe
		20							25					30	

His	Thr	Asn	Lys	Arg	Val	Cys	Glu	Glu	Ile	Ala	Ile	Ile	Pro	Ser	Lys
		35					40					45			

Lys	Leu	Arg	Asn	Lys	Ile	Ala	Gly	Tyr	Val	Thr	His	Leu	Met	Lys	Arg
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



1650

50	55	60
Ile Gln Arg Gly Pro Val Arg Gly Ile Ser Ile Lys Leu Gln Glu Glu		
65	70	75 80
Glu Arg Glu Arg Arg Asp Asn Tyr Val Pro Glu Val Ser Ala Leu Asp		
	85	90 95
Gln Glu Ile Ile Glu Val Asp Pro Asp Thr Lys Glu Met Leu Lys Leu		
	100	105 110
Leu Asp Phe Gly Ser Leu Ser Asn Leu Gln Ser Leu Ser Leu Gln Leu		
	115	120 125

Gly

&lt;210&gt; 1583

&lt;211&gt; 109

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1583

Asn Asn Gly Arg Ala Lys Lys Gly Arg Gly His Val Gln Pro Ile Arg		
1	5	10 15
Cys Thr Asn Cys Ala Arg Cys Val Pro Lys Asp Lys Ala Ile Lys Lys		
	20	25 30
Phe Val Ile Arg Asn Ile Val Glu Ala Ala Ala Val Arg Asp Ile Ser		
	35	40 45
Glu Ala Ser Val Phe Asp Ala Tyr Val Leu Pro Lys Leu Tyr Val Lys		
	50	55 60
Leu His Tyr Cys Val Thr Val Pro Ser Ile Ala Arg Leu Leu Gly Ile		
	65	70 75 80
Asp Pro Ala Lys Pro Gly Arg Thr Glu His Pro His His Asp Ser Asp		
	85	90 95
Leu Leu Ala Leu His Leu Arg Pro Pro Pro Lys Pro Met		
	100	105

&lt;210&gt; 1584

&lt;211&gt; 119

&lt;212&gt; PRT

1651

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (60)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (99)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (118)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1584

Val	Gln	Arg	Phe	Ile	Lys	Ile	Asp	Gly	Lys	Val	Arg	Thr	Asp	Ile	Thr
1				5					10					15	

Tyr	Pro	Ala	Gly	Phe	Met	Asp	Val	Ile	Ser	Ile	Asp	Lys	Thr	Gly	Glu
			20					25					30		

Asn	Phe	Arg	Leu	Ile	Tyr	Asp	Thr	Lys	Gly	Arg	Phe	Ala	Val	His	Arg
		35						40				45			

Ile	Thr	Pro	Glu	Glu	Ala	Lys	Tyr	Lys	Leu	Cys	Xaa	Val	Arg	Lys	Ile
	50					55					60				

Phe	Val	Gly	Thr	Lys	Gly	Ile	Pro	His	Leu	Val	Thr	His	Asp	Ala	Arg
65					70					75				80	

Thr	Ile	Arg	Tyr	Pro	Asp	Pro	Leu	Ile	Lys	Val	Asn	Asp	Pro	Phe	Ile
				85					90					95	

Leu	Ile	Xaa	Arg	Leu	Ala	Arg	Leu	Leu	Ile	Ser	Ser	Ile	Ser	Thr	Leu
			100					105					110		

Val	Thr	Cys	Val	Trp	Xaa	Leu
						115

&lt;210&gt; 1585

&lt;211&gt; 81

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1652

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (72)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (74)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1585

Gly	Arg	Tyr	Ala	Ala	Lys	Arg	Phe	Arg	Lys	Ala	Gln	Cys	Xaa	Ile	Val
1				5					10					15	

Glu	Arg	Leu	Thr	Asn	Ser	Met	Met	Met	Xaa	Gly	Arg	Asn	Asn	Gly	Lys
			20					25					30		

Lys	Leu	Met	Thr	Val	Arg	Ile	Val	Xaa	His	Ala	Phe	Glu	Ile	Ile	Arg
		35					40					45			

Leu	Leu	Thr	Gly	Xaa	Glu	Pro	Ser	Ala	Gly	Pro	Gly	Glu	Arg	His	His
	50					55					60				

Gln	His	Xaa	Ser	Pro	Gly	Arg	Xaa	His	Xaa	His	Trp	Ala	Arg	Arg	Asp
65					70					75					80

Cys

1653

&lt;210&gt; 1586

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1586

Lys Asn Cys Ile Val Leu Ile Asp Ser Thr Pro Tyr Arg Gln Trp Tyr  
1 5 10 15

Glu Ser His Tyr Ala Leu Pro Leu Gly Arg Lys Lys Gly Ala Lys Leu  
20 25 30

Thr Pro Glu Glu Glu Glu Ile Leu Asn Lys Lys Arg Ser Lys Lys Ile  
35 40 45

Gln Lys Lys Tyr Asp Glu Arg Lys Lys Asn Ala Lys Ile Ser Ser Leu  
50 55 60

Leu Glu Glu Gln Phe Gln Gln Gly Lys Leu Leu Ala Cys Ile Ala Ser  
65 70 75 80

Arg Pro Gly Gln Cys Gly Arg Ala Asp Gly Tyr Val Leu Glu Gly Lys  
85 90 95

Glu Leu Glu Phe Tyr Leu Arg Lys Ile Lys Ala Arg Lys Gly Lys  
100 105 110

&lt;210&gt; 1587

&lt;211&gt; 125

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (105)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1587

Arg Thr Met Pro Gly Val Thr Val Lys Asp Val Asn Gln Gln Glu Phe  
1 5 10 15

1654

Val Arg Ala Leu Ala Ala Phe Leu Lys Lys Ser Gly Lys Leu Lys Val  
20 25 30

Pro Glu Trp Val Asp Thr Val Lys Leu Ala Lys His Lys Glu Leu Ala  
35 40 45

Pro Tyr Asp Glu Asn Trp Phe Tyr Thr Arg Ala Ala Ser Thr Ala Arg  
50 55 60

His Leu Tyr Leu Arg Gly Gly Ala Gly Val Gly Ser Met Thr Lys Ile  
65 70 75 80

Tyr Gly Gly Arg Gln Arg Asn Gly Val Met Pro Ser His Phe Ser Arg  
85 90 95

Gly Ser Lys Ser Val Ala Arg Arg Xaa Leu Gln Ala Leu Gly Gly Ala  
100 105 110

Glu Asn Gly Gly Xaa Gly Pro Arg Trp Arg Pro Ala Asn  
115 120 125

&lt;210&gt; 1588

&lt;211&gt; 38

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

1655

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (35)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1588

Cys Met Leu Xaa Leu Val Leu Xaa Leu Leu Ser Ser Ser Ser Ala Glu  
1 5 10 15

Glu Tyr Xaa Gly Leu Ser Ala Asn Gln Cys Ala Val Xaa Ala Lys Asp  
20 25 30

Xaa Val Xaa Cys Gly Tyr  
35

<210> 1589

<211> 55

<212> PRT

<213> Homo sapiens

<400> 1589

Gly Thr Ala Thr Gln Gly Leu Ser Pro Val His Thr Pro Gly Asp Gly  
1 5 10 15

Arg Leu His Lys Ala Val Ser Val Gly Pro Arg Val His Ile Ile Glu  
20 25 30

Glu Leu Gln Ile Phe Ser Ser Gly Gln Pro Val Ala Glu Ser Ala Pro  
35 40 45

Gly Thr Pro Thr Gly Gly Leu  
50 55

<210> 1590

<211> 92

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (15)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1590

Leu Glu Asp Gly Phe Gly Glu His Pro Phe Tyr His Cys Leu Xaa Ala

1656

1                    5                    10                    15  
Glu Val Pro Lys Glu His Trp Thr Pro Glu Gly His Ser Ile Val Gly  
                  20                    25                    30  
Phe Ala Met Tyr Tyr Phe Thr Tyr Asp Pro Trp Ile Gly Lys Leu Leu  
                  35                    40                    45  
Tyr Leu Glu Asp Phe Phe Val Met Ser Asp Tyr Arg Gly Phe Gly Ile  
                  50                    55                    60  
Gly Ser Glu Ile Leu Lys Asn Leu Ser Gln Val Ala Met Arg Cys Arg  
                  65                    70                    75                    80  
Cys Ser Ser Met His Phe Phe Gly Ser Arg Met Glu  
                  85                    90

&lt;210&gt; 1591

&lt;211&gt; 139

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (8)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1657

&lt;222&gt; (114)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (125)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (133)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1591

Xaa	Gly	Gly	Phe	Xaa	Ile	Thr	Xaa	Gly	Xaa	Asp	Glu	Gly	Lys	Leu	Val
1				5					10					15	

Thr	Pro	Ala	Gly	Asp	Arg	Ser	Gly	Ile	Pro	Gly	Ser	Thr	His	Ala	Ser
			20					25					30		

Gly	Arg	Asp	Val	Ser	Gln	Lys	Val	Leu	Arg	Ser	Gln	Thr	Trp	Val	Pro
		35					40					45			

Arg	Leu	Pro	Ala	Ser	Glu	Ala	Xaa	Ser	Arg	His	Arg	Gly	Lys	Val	Lys
	50					55					60				

Ser	Phe	Pro	Lys	Asp	Asp	Pro	Ser	Lys	Pro	Val	His	Leu	Thr	Ala	Phe
65					70					75					80

Leu	Gly	Tyr	Lys	Ala	Gly	Met	Thr	His	Ile	Val	Arg	Glu	Val	Asp	Arg
			85						90					95	

Pro	Gly	Ser	Lys	Val	Asn	Lys	Lys	Glu	Gly	Gly	Gly	Gly	Cys	Asp	His
			100					105					110		

Cys	Xaa	Asp	Thr	Xaa	His	Gly	Gly	Leu	Trp	Ala	Leu	Xaa	Ala	Thr	Leu
		115					120					125			

Glu	Asn	Pro	Arg	Xaa	Leu	Arg	Asn	Phe	Lys	Asn
	130						135			

&lt;210&gt; 1592

&lt;211&gt; 42

&lt;212&gt; PRT



1658

&lt;213&gt; Homo sapiens

&lt;400&gt; 1592

Ala Glu His Gly Asp Gln Asp Tyr Ile Trp His Cys Ile Asp Leu Phe  
1 5 10 15

Leu Asp Phe Ile Thr Val Phe Arg Lys Leu Met Met Ile Leu Ala Met  
20 25 30

Asn Glu Lys Asp Lys Lys Lys Glu Lys Lys  
35 40

&lt;210&gt; 1593

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1659

&lt;222&gt; (60)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (62)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (79)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1593

Trp	Ile	Pro	Arg	Ala	Ala	Gly	Ser	Leu	Ser	Leu	Ala	Gln	Arg	Arg	Gly
1				5					10					15	

Xaa	Thr	Lys	Thr	Tyr	Thr	Val	Gly	Xaa	Glu	Glu	Cys	Thr	Val	Xaa	Pro
			20					25					30		

Xaa	Leu	Ser	Ile	Pro	Cys	Lys	Leu	Gln	Ser	Gly	Thr	His	Cys	Xaa	Trp
		35					40					45			

Thr	Asp	Gln	Leu	Leu	Gln	Gly	Xaa	Glu	Lys	Gly	Xaa	Gln	Xaa	Arg	His
	50					55					60				

Leu	Ala	Cys	Leu	Pro	Arg	Glu	Pro	Gly	Leu	Gly	Thr	Trp	Gln	Xaa	Leu
65					70					75					80

Arg	Ser	Gln	Ile	Ala
				85

&lt;210&gt; 1594

&lt;211&gt; 183

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (107)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1660

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (136)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (151)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (152)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (160)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1594

Ala	Ala	Arg	Gly	Ala	Gln	Arg	Asp	Thr	Arg	Glu	Pro	Thr	Met	Ala	Pro
1				5					10					15	

Phe	Glu	Pro	Leu	Ala	Ser	Gly	Ile	Leu	Leu	Leu	Leu	Trp	Leu	Ile	Ala
			20					25					30		

Pro	Ser	Arg	Ala	Cys	Thr	Cys	Val	Pro	Pro	His	Pro	Gln	Thr	Ala	Phe
			35					40					45		

Cys	Asn	Ser	Asp	Leu	Val	Ile	Arg	Ala	Lys	Phe	Val	Gly	Thr	Pro	Glu
	50					55					60				

Val	Asn	Gln	Thr	Thr	Leu	Tyr	Gln	Arg	Tyr	Glu	Ile	Lys	Met	Thr	Xaa
65					70					75					80

Met	Tyr	Lys	Gly	Phe	Gln	Ala	Leu	Gly	Asp	Ala	Ala	Asp	Ile	Arg	Phe
				85					90					95	

Val	Tyr	Thr	Pro	Ala	Met	Glu	Ser	Val	Cys	Xaa	Tyr	Phe	His	Arg	Ser
			100						105					110	

His	Asn	Arg	Ser	Glu	Glu	Phe	Leu	Ile	Xaa	Gly	Lys	Leu	Gln	Asp	Gly
			115					120					125		

Leu	Leu	His	Ile	Thr	Thr	Cys	Xaa	Phe	Val	Ala	Pro	Trp	Asn	Ser	Leu
			130					135					140		

1661

Ser Leu Ala Gln Arg Arg Xaa Xaa Thr Lys Thr Tyr Thr Val Gly Xaa  
 145 150 155 160

Glu Glu Met His Lys Cys Phe Pro Val Tyr Pro Ser Pro Ala Asn Cys  
 165 170 175

Arg Val Gly Thr His Cys Leu  
 180

<210> 1595

<211> 153

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (143)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (151)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1595

Ser Thr Cys Pro Asp Glu Gln Cys Val Asn Ser Pro Gly Ser Tyr Gln  
 1 5 10 15

Cys Val Pro Cys Thr Glu Gly Phe Arg Gly Trp Asn Gly Gln Cys Leu  
 20 25 30

Asp Val Asp Glu Cys Leu Glu Pro Asn Val Cys Ala Asn Gly Asp Cys  
 35 40 45

Ser Asn Leu Glu Gly Ser Tyr Met Cys Ser Cys His Lys Gly Tyr Thr  
 50 55 60

Arg Thr Pro Asp His Lys His Cys Arg Asp Ile Asp Glu Cys Gln Gln  
 65 70 75 80

Gly Asn Leu Cys Val Asn Gly Gln Cys Lys Asn Thr Glu Gly Ser Phe  
 85 90 95

Arg Cys Thr Val Asp Arg Gly Tyr Gln Leu Ser Ala Ala Lys Asp Gln  
 100 105 110

Phe Glu Asp Ile Asp Glu Cys His Thr Val Ile Ser Val Ala His Gly  
 115 120 125

1662

His Ala Arg Thr Leu Lys Leu Phe Ser Met Cys Phe Leu Thr Xaa Val  
 130 135 140

Thr Glu His Leu Gly Leu Xaa Thr Leu  
 145 150

&lt;210&gt; 1596

&lt;211&gt; 111

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (102)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1596

Leu Gly Ser Ser Ala Met Ala Pro Ser Arg Lys Phe Phe Val Gly Gly  
 1 5 10 15

Asn Trp Lys Met Asn Gly Arg Lys Gln Ser Leu Gly Glu Leu Ile Gly  
 20 25 30

Thr Leu Asn Ala Ala Lys Val Pro Ala Asp Thr Glu Val Val Cys Ala  
 35 40 45

Pro Pro Thr Ala Tyr Ile Asp Phe Ala Arg Gln Lys Leu Asp Pro Lys  
 50 55 60

Ile Ala Val Ala Ala Gln Asn Cys Tyr Lys Val Thr Asn Gly Ala Phe  
 65 70 75 80

Thr Gly Glu Ile Ser Pro Gly Met Ile Lys Asp Cys Gly Pro Arg Gly  
 85 90 95

Trp Ser Trp Gly Thr Xaa Arg Glu Ala Cys Leu Trp Gly Ile Arg  
 100 105 110

&lt;210&gt; 1597

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1663

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (79)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1597

Ile	Phe	Glu	Asp	Ser	Asp	Ser	Leu	Arg	Leu	Arg	Arg	Asp	Val	Leu	Pro
1						5			10					15	

Ala	Ala	Xaa	Val	Gln	Ala	Ala	Leu	Pro	Ala	Thr	Ser	Cys	Val	Pro	His
			20					25					30		

Ala	Lys	Val	Pro	Lys	Ser	His	Val	His	Pro	Arg	Ser	Ala	Leu	Ser	Leu
		35					40						45		

Thr	Cys	Leu	Leu	Leu	Val	His	Leu	Ser	Ile	Ala	His	Leu	His	Leu	Ala
	50						55					60			

Ser	Ile	Asn	Ala	Leu	Leu	Xaa	Gln	Pro	Tyr	His	Pro	Gly	Ser	Xaa	Xaa
65						70					75				80

Ser Pro

&lt;210&gt; 1598

&lt;211&gt; 52

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1664

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1598

Xaa	Lys	Xaa	Gly	Arg	Asn	Lys	Ala	Arg	Pro	Leu	Thr	Ser	Leu	Arg	Xaa
1					5				10				15		

Thr	Phe	Xaa	Ala	Thr	Phe	Cys	Pro	Val	Xaa	Gly	Thr	Tyr	Ile	Leu	Asn
			20					25					30		

Asp	Cys	Pro	Xaa	Thr	His	Ser	Gly	Ile	Phe	Phe	Phe	Leu	Lys	Xaa	Xaa
		35					40						45		

Xaa	Lys	Ala	Phe
			50

1665

<210> 1599  
<211> 32  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (4)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (9)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (15)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (26)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (27)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1599  
Ala Phe Asn Xaa Ser Tyr Arg Lys Xaa Val Xaa Ala Val Arg Xaa Glu  
1 5 10 15

Phe Arg Val Thr Gln Arg Pro Gly Leu Xaa Xaa Leu Gly Leu Glu Phe  
20 25 30

<210> 1600  
<211> 19  
<212> PRT  
<213> Homo sapiens



1666

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (13)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (15)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1600  
Ala Arg Gly Phe Phe Phe Phe Phe Phe Phe Xaa Xaa Phe Xaa Phe  
1 5 10 15

Phe Lys Lys

<210> 1601  
<211> 22  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (2)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (20)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (22)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1601  
Arg Xaa Asn Arg Val Phe Phe Phe Phe Phe Phe Phe Phe Phe Phe  
1 5 10 15

Phe Phe Phe Xaa Pro Xaa  
20

1667

<210> 1602  
<211> 104  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (98)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1602  
Asp Phe Gly Arg Ser Phe Leu Leu Trp Phe Ser Leu Phe Phe Leu Pro  
1 5 10 15  
Phe Tyr Ser Ala Arg Ile Ser Gly Gly Leu Met Val Gly Tyr Asn Val  
20 25 30  
Ser Val Leu Leu Gln Ile Gly Leu Lys Gly Tyr Pro Ala Glu Ser Pro  
35 40 45  
Ala Phe Leu Ser Ser Ile Tyr Phe Ser Gly Lys Leu Phe Phe Leu Phe  
50 55 60  
Phe Phe Lys Val Asn Leu Cys Ile Glu Leu Asn Cys Ile Ser Val Phe  
65 70 75 80  
Pro Ala Tyr Val Tyr Ile Ile Pro Met Ile Pro Asn Ser Tyr Leu Tyr  
85 90 95  
Phe Xaa Thr Asn Ser Gln Ser Glu  
100

<210> 1603  
<211> 86  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (30)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (45)  
<223> Xaa equals any of the naturally occurring L-amino acids

1668

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (62)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (63)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (73)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (81)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1603

Phe	Leu	Met	Leu	Ser	Phe	Met	Gly	Ile	Val	Thr	Phe	Leu	Phe	Ser	Lys
1				5					10					15	

Ser	His	Cys	Trp	Asn	His	Gln	Gly	Cys	Gly	Met	Ser	Leu	Xaa	Val	Leu
			20					25					30		

Phe	Met	Gln	Val	Thr	Val	Thr	Phe	Ala	Ile	Met	Ala	Xaa	Phe	Glu	Thr
		35						40				45			

Leu	Ile	Met	Cys	Phe	Tyr	Phe	Phe	Ile	Pro	Val	Lys	Met	Xaa	Xaa	Lys
		50						55				60			

Arg	Lys	Lys	Val	Val	Ile	Ala	Pro	Xaa	Ile	Ser	Gly	Ser	Lys	Leu	Xaa
65						70					75				80

Xaa	Lys	Phe	Pro	Lys	Lys
				85	

&lt;210&gt; 1604

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1669

&lt;400&gt; 1604

Ser Asp Glu Ile Ile Tyr Asn Phe Ile Val Thr Ser Ser Val Phe Pro  
1 5 10 15

Phe Glu Arg Cys Met Asn Ser Leu His Phe Tyr Ser Asn Val Leu Ser  
20 25 30

Val Asp

&lt;210&gt; 1605

&lt;211&gt; 53

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (45)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1605

Leu Leu Val Trp Ser Glu Tyr Asn Thr Ser Ile Ile Thr Tyr Asn Ser  
1 5 10 15

1670

Xaa Pro Gly Thr Gly Gly Tyr Lys Tyr Asn Phe Phe Lys Xaa Asn Ser  
20 25 30

Trp Leu Ser Thr Xaa Leu Gln Val Pro Leu Xaa Gly Xaa Leu Trp Xaa  
35 40 45

Ile Thr Leu Gly Lys  
50

<210> 1606

<211> 32

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (15)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (20)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (22)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (23)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (28)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (31)

<223> Xaa equals any of the naturally occurring L-amino acids

1671

&lt;400&gt; 1606

Asp Ala Trp Ala Asp Ala Trp Gly Lys Val Ser Ser Ser Leu Xaa Ser  
1 5 10 15  
Xaa Ile Cys Xaa Leu Xaa Xaa Arg Lys Val Arg Xaa Gly Gln Xaa Met  
20 25 30

&lt;210&gt; 1607

&lt;211&gt; 31

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1607

Leu Ile Met Asp Thr Ile Leu Asn Lys Xaa Ile Gln Val Lys Pro Val  
1 5 10 15  
Lys Glu Lys Glu Ile Lys Val Ser Gly Ser Cys Xaa Ser Xaa Val  
20 25 30

&lt;210&gt; 1608

&lt;211&gt; 107

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1672

<220>  
<221> SITE  
<222> (34)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (55)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (74)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (76)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (77)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (79)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (87)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (97)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (101)  
<223> Xaa equals any of the naturally occurring L-amino acids

1673

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (102)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (103)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (104)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (107)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1608

Asp Pro Gln Gly Ile Arg His Pro His Ile Val Gln Leu Lys Asp Phe  
1 5 10 15

Gln Cys Glu Leu Gly Ala Gly Xaa Leu Pro Lys Gly Val Glu Lys Asp  
20 25 30

Ile Xaa Phe Arg Pro Xaa Leu Cys Leu Leu Lys Gln Gln Leu Gly Thr  
35 40 45

Val Glu Pro Ile Asn Leu Xaa Phe Asn Pro Leu Gly Ser Phe Phe Ala  
50 55 60

Gly Gln Gly Gly Gly Arg Lys Pro Trp Xaa Phe Xaa Xaa Phe Xaa Ser  
65 70 75 80

Gln Leu Asn Pro Gly Gln Xaa Asn Phe Leu Gly Pro Leu Lys Glu Lys  
85 90 95

Xaa Phe Gly Pro Xaa Xaa Xaa Xaa Leu Ser Xaa  
100 105

&lt;210&gt; 1609

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE



1674

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1609

Arg Gln Thr Ser Thr Ala Lys Leu Gln Lys Gly Gly Phe Cys Ser Arg  
1 5 10 15

Arg Lys Glu Asp Val Tyr Leu Gln Gly Ala Lys Gln Gly Glu Leu Gly  
20 25 30

Ser Ser Cys Leu Arg Pro Asn Leu His Asp Asp Leu Gln Ala Arg Val  
35 40 45

Phe Lys Xaa Ser Gly Lys Phe Pro Gly Lys Pro Glu Val Lys Gly Gln  
50 55 60

Asn Cys Lys Ser Val Glu Ile Gly  
65 70

&lt;210&gt; 1610

&lt;211&gt; 77

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1610

Leu Tyr Arg Gly Ser Val Gln Gly Arg Val Glu Leu Leu Ser Glu Gly  
1 5 10 15

Ser Leu Gly Gly Pro Leu Arg Pro Gly Pro Asp Pro Val Leu Gln Gly  
20 25 30

Leu Ser Gln Gly Gln Val His Gly Glu Thr Met Gly Cys Leu Ser Asp  
35 40 45

Thr Asp Leu Ala Leu Leu Ser Pro Pro Ile Arg Leu Ser Phe Leu Cys  
50 55 60

Ser Glu Cys Leu Gln Gly Leu Asp Pro Gly Lys Glu Phe  
65 70 75

&lt;210&gt; 1611

&lt;211&gt; 72

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1675

<222> (7)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (15)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (16)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (25)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (42)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (54)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (58)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (66)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (71)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1611  
Glu Asn Leu Pro Ser Gln Xaa Ala Pro Ala Gly Leu Pro Lys Xaa Xaa  
1 5 10 15

1676

Gln Pro Cys Leu Tyr Phe Tyr Gly Xaa Asn Gly His Lys Ile Ile Ile  
20 25 30  
Asn Leu Thr Lys Thr Xaa Leu Phe Ser Xaa Phe Leu Glu Leu Ser Trp  
35 40 45  
Ser Phe Leu Ile Leu Xaa Phe Gly Asn Xaa Arg Leu Phe Leu Lys Cys  
50 55 60  
Phe Xaa Asp Val Lys Ile Xaa Tyr  
65 70

&lt;210&gt; 1612

&lt;211&gt; 63

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1677

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (56)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1612

Arg	Glu	Ser	Glu	Met	Leu	Cys	Asn	Leu	Leu	Xaa	Gln	Leu	Lys	His	Xaa
1				5					10					15	

Met	Leu	Arg	Gly	Arg	Asn	Tyr	Lys	Xaa	Cys	Ser	Asn	Leu	Phe	Trp	Val
			20					25					30		

Ile	Xaa	Met	Tyr	Leu	Trp	Val	Gln	Ala	Leu	Phe	Gly	Gly	Phe	Xaa	Phe
		35					40					45			

Gln	Arg	Asn	Xaa	Xaa	Lys	Val	Xaa	Leu	Leu	Ile	Lys	Lys	Arg	Lys
		50				55						60		

&lt;210&gt; 1613

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (12)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1613

Lys	Ser	Xaa	Ser	Xaa	Thr	Ala	Gly	Asp	Arg	Xaa	Xaa	Thr	Ser	Gly	Ser
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1678

1                      5                      10                      15  
Pro Gly Leu Gln Glu Phe  
                    20

&lt;210&gt; 1614

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (14)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (46)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (63)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1679

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (75)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (83)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1614

Asp Gly Gly Phe Xaa Xaa Phe Phe Phe Phe Phe Phe Phe Xaa Xaa Phe  
 1 5 10 15

Phe Phe Tyr Xaa Trp Val Ile Ser Thr Cys Phe Ile Pro Ala Ile Lys  
 20 25 30

Ile Ile Lys Asn Ile Ser Asn Tyr Tyr Thr His Thr Lys Xaa Val Gln  
 35 40 45

Ser Leu Xaa Leu Pro Pro Thr Pro Arg Gly Lys Asn Cys Phe Xaa Leu  
 50 55 60

Trp Glu Val Val Ser Glu Thr Arg Gly Gln Xaa Thr Gln Xaa Arg Leu  
 65 70 75 80

Gly Gly Xaa Arg Xaa  
 85

&lt;210&gt; 1615

&lt;211&gt; 85 -

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1615

Tyr Ala Val Pro Cys Ser Gly Ile Gln Gly Arg Phe Ser Pro Leu Ser  
 1 5 10 15

1680

Phe Leu Leu Ala Gly Asp Ser Cys Thr Cys Ala Gly Ser Cys Lys Cys  
                   20                  25                  30  
 Lys Glu Cys Lys Cys Thr Ser Cys Lys Lys Ser Lys Trp Asp Pro Leu  
                   35                  40                  45  
 Phe Pro Leu Pro Leu Pro Val Leu Gln Pro Val Pro Ser Ser Pro Ser  
                   50                  55                  60  
 Ser Gly Glu Leu Lys Gln Val Trp Gly Cys Pro Ile Ala Pro Gly Asn  
                   65                  70                  75                  80  
 Trp Trp Pro Pro Gln  
                                   85

&lt;210&gt; 1616

&lt;211&gt; 29

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (25)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1616

Ala Glu Gly Asn Ile Arg Xaa Ala Lys Lys Lys Lys Lys Lys Lys  
   1                  5                  10                  15

1681

Lys Lys Lys Lys Lys Lys Lys Lys Xaa Xaa Lys Xaa Xaa  
                   20                                  25

&lt;210&gt; 1617

&lt;211&gt; 37

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1617

Gly Pro Ala Xaa Trp Arg Glu Thr Pro Pro Xaa Leu Tyr Lys Glu Phe  
   1                  5                                  10                                  15

Pro Gly Val Xaa Gly Ser Phe Ser Leu Xaa Ser Glu Trp Gly Ala Gln  
                   20                                  25                                  30

Ile Trp Ala Xaa Cys  
                   35

&lt;210&gt; 1618

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens



1682

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1618

Gly	Xaa	Gly	Phe	Xaa	Pro	Ser	Pro	Ser	Cys	Phe	Pro	Gln	Cys	Leu	Lys
1				5					10					15	

Xaa	Leu	Asp	Gly	Leu	Xaa
				20	

&lt;210&gt; 1619

&lt;211&gt; 52

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1619

Gln	Ser	Ile	Ser	Leu	Asn	Arg	Asp	Gly	Val	Glu	Glu	Leu	Lys	Val	Gly
1				5					10					15	

Ile	Cys	Ser	Leu	Met	Thr	Thr	Met	Phe	Thr	Ile	Cys	Cys	Gly	Leu	Val
			20					25					30		

Gly	Ala	Leu	Arg	Gln	Glu	Asn	His	Val	Glu	Pro	Thr	Gly	Ser	Arg	Pro
		35					40						45		

Ala	Trp	Glu	Thr
			50

&lt;210&gt; 1620

1683

<211> 52  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (28)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (35)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1620  
Pro Thr Glu Gln Val Thr Leu Gly Ile Thr Ala Gln Ser Tyr Ser Arg  
1 5 10 15  
Val His Ile Asn Asn Arg Val Tyr Asp Leu Asp Xaa Gly Ser Gly His  
20 25 30  
Pro Asp Xaa Ala Ala Ala Ile Lys Gly Ser Phe Val Gln Arg Leu Lys  
35 40 45  
Ser Tyr Val Ile  
50

<210> 1621  
<211> 113  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (87)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (108)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (112)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1621  
Leu Phe Pro Ala Pro Ala Pro Pro Pro Ala Pro Ala Phe Ala Pro Pro

1684

```

      1             5             10             15
Pro Lys Val Pro Ser Pro Glu Arg Ser Ala Pro Arg Val Pro Leu Pro
      20             25             30
Ser Pro Gln Pro Ser Tyr Pro Phe Arg Pro Ala Ala Ser Gly Gly Thr
      35             40             45
Pro Pro Pro Ala Cys Leu Pro Pro Ala Gln Pro Cys Gln Val Pro Pro
      50             55             60
Ala Met Asn Leu Phe Arg Phe Leu Gly Lys Leu Ser Gln Leu Leu Ala
      65             70             75             80
Ile Ile Leu Leu Leu Leu Xaa Ile Trp Asn Ser Arg Ser Cys Ala Glu
      85             90             95
Ile Gln Glu Lys Asn Ser Pro Val Trp Cys Gly Xaa Phe Asn Gly Xaa
      100            105            110
Ile

```

&lt;210&gt; 1622

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (6)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1622

```

Val Phe Lys Thr Met Xaa Gln Val Ser Asn Asp Glu Ile Lys His Leu
  1             5             10             15

```

```

Phe Val Leu Tyr Gln
      20

```

&lt;210&gt; 1623

&lt;211&gt; 40

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

1685

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (23)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (29)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (33)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (39)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1623

Leu	Arg	Thr	Ser	Cys	Phe	Xaa	Leu	Asn	Xaa	Met	Ile	His	Phe	Ile	Lys
1					5					10				15	

Val	Pro	Val	Ile	Lys	Tyr	Xaa	Val	Lys	Tyr	Leu	Leu	Xaa	Trp	Thr	Ile
			20					25					30		

Xaa	Cys	Lys	Leu	Pro	Phe	Xaa	Xaa
		35					40

&lt;210&gt; 1624

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1686

&lt;221&gt; SITE

&lt;222&gt; (4)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (39)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (79)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (87)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1624

Ile	His	Pro	Xaa	Leu	Ala	Ser	Gln	Val	Ala	Gly	His	Tyr	Arg	Arg	Glu
1				5					10					15	

His	Ser	Arg	Pro	Arg	Leu	Lys	Xaa	Ala	Tyr	Ser	Lys	Lys	Gln	Phe	Gln
			20					25					30		

1687

Phe Leu Ser Lys Leu Cys Xaa Xaa Arg Gly Ser Thr Asp Phe Leu Gly  
35 40 45

Pro Val Asn Leu Asn Gln Ser Leu Arg Phe Cys Gln Glu Ser Ser Leu  
50 55 60

Leu Ser Lys Trp Val Phe Pro Asn Gly His Asn Gly Lys Xaa Xaa Arg  
65 70 75 80

Gly Xaa Asn Ile Lys Lys Xaa Lys Lys Asn Leu Gly Gly Gly Xaa  
85 90 95

&lt;210&gt; 1625

&lt;211&gt; 40

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1625

Ala Arg Ala Thr Met Ala Leu Trp Thr Xaa Val Ser Phe Ala Glu Xaa  
1 5 10 15

Leu Glu Arg Gly Ser Asp Glu Lys Val Xaa Leu Lys Arg Leu Ala Arg  
20 25 30

Leu Leu Gly Leu Ile Thr Ala Pro  
35 40

&lt;210&gt; 1626

&lt;211&gt; 26

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1688

<220>  
<221> SITE  
<222> (8)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (26)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1626  
Ala Arg Ala Gly Ile Val Pro Xaa His Ser Ser Leu Gly Asp Arg Ala  
1 5 10 15  
Arg Leu His Leu Lys Lys Lys Lys Xaa  
20 25

<210> 1627  
<211> 171  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (59)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (89)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (118)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (119)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (121)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1689

&lt;222&gt; (122)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (123)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (135)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (155)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1627

Glu	Leu	Gln	Ala	Ser	Glu	Asn	Gln	Pro	Cys	Ser	Arg	His	Ala	Arg	Pro
1				5				10						15	

Arg	Leu	Pro	Ser	Ser	Leu	Phe	Pro	Leu	Pro	Ala	Gln	Pro	Ser	Leu	Pro
			20					25					30		

Ser	Ser	Ala	Gly	Lys	Ala	Gly	Thr	His	Ser	Gly	Cys	Leu	Pro	Pro	Gly
		35					40					45			

Gly	Lys	Glu	Arg	Glu	Gly	Gly	Trp	Val	Gly	Xaa	Gly	Leu	Pro	Pro	Gly
	50					55					60				

Asn	Val	Thr	Leu	Pro	Gly	Pro	Arg	Ile	Ala	Pro	Gly	Pro	Lys	Pro	Lys
65					70					75				80	

Ala	Gln	Pro	Gly	Thr	Lys	Leu	Arg	Xaa	Ser	Ala	Gly	Arg	Ser	Tyr	Phe
				85					90					95	

Tyr	Leu	Pro	Pro	Pro	Leu	Leu	Val	Pro	Pro	Pro	Gly	Arg	Leu	Ala	Ala
		100						105					110		

Glu	Ser	Asp	Thr	Gly	Xaa	Xaa	Lys	Xaa	Xaa	Xaa	Glu	Pro	Trp	Tyr	Pro
		115					120						125		

Ile	Leu	Gly	Pro	Gly	Pro	Xaa	Leu	Gly	Pro	Asn	Pro	Ser	Ser	Val	Asp
	130					135					140				

Asn	Gly	Val	Trp	Asn	Lys	Cys	Cys	Leu	Ser	Xaa	Gln	Gln	Lys	Lys	Lys
145					150					155				160	

Lys	Arg	Gly	Gly	Arg	Phe	Arg	Gly	Phe	Lys	Ala
				165					170	



1690

&lt;210&gt; 1628

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (93)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (110)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (111)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (117)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1628

Arg Pro Ala Arg Ser Pro Ala Glu Val Gly Ser Arg Gly Leu Ser Ser  
 1 5 10 15

Pro Pro Arg Ala His His Arg Pro Val Ser Pro Ala Ala Pro Gly Arg  
 20 25 30

Trp Ser Thr Ser Ala Arg Val Arg Thr Arg Lys Met Val Asn Tyr Ala  
 35 40 45

Trp Ala Gly Arg Xaa Arg Arg Lys Leu Trp Trp Arg Ser Val Ala Val  
 50 55 60

Leu Thr Cys Lys Ser Val Val Arg Pro Gly Tyr Arg Gly Glu Arg Leu  
 65 70 75 80

Asn Arg Thr Ile Leu Val Ser Trp Phe Pro Ser Glu Xaa Phe Pro Gln  
 85 90 95

1691

Asp Lys Leu Gly Ala Leu Ala Arg Pro Arg Arg Asn Pro Xaa Xaa Gly  
                   100                  105                  110

Ile Phe Ile Arg Xaa Lys Arg Ile  
           115                  120

&lt;210&gt; 1629

&lt;211&gt; 86

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1629

Asn Leu Val Pro Gly Ser Ser Ala Thr Tyr Ile Ser Leu Ser Ser Cys  
       1                  5                  10                  15

Cys Phe Val Lys Arg Lys Arg Lys Lys Lys Pro Lys Leu Val Arg Val  
                   20                  25                  30

Ile Ser Asn Tyr Leu Ile Phe Cys Arg Ser Val Ile Lys Asn Leu Val  
           35                  40                  45

Ile Pro Ser Thr Ser Tyr Cys Glu Glu Gln Thr Leu Gly Pro Thr Leu  
           50                  55                  60

Lys Ser Pro Leu Val Thr His Ser His Pro Pro Gly Ser Cys Leu Pro  
       65                  70                  75                  80

Gly Arg Gly Cys Arg Lys  
                   85

&lt;210&gt; 1630

&lt;211&gt; 35

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1630

Leu Lys Lys Lys Phe Pro Glu Glu Glu Lys Lys Thr Thr Lys Asn Lys  
       1                  5                  10                  15

Thr Leu Lys Val Asp Ile Leu Cys Gly Xaa Thr Phe Glu Leu Asn Ser  
           20                  25                  30

1692

Glu Phe Phe  
35

<210> 1631  
<211> 40  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (23)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (29)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (31)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1631  
His Glu Gln Pro Thr Ala Ala Cys Ile Cys Ile Xaa Arg Gln Val Pro  
1 5 10 15  
Pro Val Pro Ala Ala Arg Xaa Pro Gln Ser Arg Thr Xaa Ser Xaa Gln  
20 25 30  
Ala Lys Leu Ala Leu Thr Met Pro  
35 40

<210> 1632  
<211> 97  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (17)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (26)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (41)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (44)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (47)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (53)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (61)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (74)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (91)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (95)

<223> Xaa equals any of the naturally occurring L-amino acids

1694

&lt;400&gt; 1632

Xaa Ser Gly Ser Pro Gly Pro Ala Gly Pro Arg Gly Pro Val Gly Pro  
 1 5 10 15

Xaa Gly Pro Pro Gly Lys Asp Gly Thr Xaa Gly His Pro Gly Ala Ile  
 20 25 30

Gly Pro Pro Gly Pro Arg Gly Asn Xaa Gly Glu Xaa Gly Ser Xaa Gly  
 35 40 45

Ser Pro Gly Pro Xaa Arg Ala Thr Arg Ala Leu Leu Xaa Pro Pro Gly  
 50 55 60

Ala Pro Gly Pro Cys Cys Gly Gly Val Xaa Ala Ala Ala Ile Ala Gly  
 65 70 75 80

Ile Gly Arg Leu Lys Lys Leu Gly Arg Phe Xaa Pro Arg Val Xaa Trp  
 85 90 95

Gly

&lt;210&gt; 1633

&lt;211&gt; 43

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (31)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (38)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (39)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1695

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1633

Glu Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys  
 1 5 10 15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Gly Arg Pro Phe Xaa Arg  
 20 25 30

Ile Gln Xaa Tyr Val Xaa Xaa Xaa Ala Thr Ser  
 35 40

&lt;210&gt; 1634

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (82)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1634

Ala Arg Ala Ala Leu Ser Ala Thr Lys Thr Cys Arg Pro Ala Phe Arg  
 1 5 10 15

Gly Ala Ser Ala Ala Pro Arg Gly Gly Gly Pro Ala Arg Ser Pro Gly  
 20 25 30

Arg Val Leu Gly Arg His Ala Ala Gly Ser Leu Ala Arg Leu Val Gly  
 35 40 45

Arg Ser Arg Gly Phe Trp Leu Leu Gly Gly Glu Val Lys Ser Phe Cys  
 50 55 60

Arg Cys Trp Gly Arg Arg Thr Arg Arg Glu Arg Lys Lys Lys Lys Lys  
 65 70 75 80

Lys Xaa Leu Gly Lys Tyr Phe Xaa  
 85

1696

&lt;210&gt; 1635

&lt;211&gt; 105

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (70)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (102)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1635

Tyr	Ser	His	Ser	Gly	Phe	Cys	Ser	Pro	Thr	Asp	Glu	Asp	Arg	Cys	Thr
1				5					10					15	

Asn	Glu	Ala	Asp	Gly	Asn	His	Pro	Val	Glu	Val	His	Leu	Arg	Ser	Asp
			20				25						30		

Pro	Asp	Asp	Ala	Arg	Ala	Met	Thr	Gly	Pro	Ala	Gly	Val	Ala	Pro	Arg
		35					40					45			

Gly	Asp	Gln	Pro	Trp	Ser	Ser	His	Arg	Arg	Lys	Pro	Leu	Arg	Ser	Gly
	50					55					60				

Lys	Arg	Arg	Arg	Lys	Xaa	Lys	Trp	Gln	Lys	Gln	Lys	Glu	Pro	Gln	Ser
65					70				75						80

Ser	Ile	Gly	Asp	His	Ser	Met	His	Phe	Leu	Pro	Ala	Ala	Thr	Gln	Thr
				85					90					95	

Leu	Pro	Glu	Leu	Leu	Xaa	Asn	Leu	Met
		100					105	

&lt;210&gt; 1636

&lt;211&gt; 47

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (5)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1697

<221> SITE  
<222> (6)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (46)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1636  
Gln Arg Pro Arg Xaa Xaa Gly Thr Gly Ser Gly Pro Pro Gly Pro Gly  
1 5 10 15  
Lys Ala Ser His Gly Gly Gly Ala Pro Val Ser Arg Ser Gly Thr Gly  
20 25 30  
Ser Glu Asp Gly Arg Glu Ser Arg Ala Thr Val Val Val Xaa Cys  
35 40 45

<210> 1637  
<211> 55  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (16)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (19)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (21)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (31)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids



1698

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (50)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (55)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1637

Gly	Asp	Pro	Pro	Glu	Gly	Pro	Ala	Thr	Ser	Pro	Leu	Thr	Asn	Ser	Xaa
1				5				10						15	

His	Pro	Xaa	Ser	Xaa	Gly	Thr	Ala	Ala	Ala	Thr	Gln	Arg	Arg	Xaa	Ser
			20				25						30		

Glu	Gln	Gly	Gly	Arg	Xaa	Thr	Cys	Gly	Pro	Ala	Gly	Ala	Gly	Ser	Pro
		35					40					45			

Xaa	Xaa	Pro	Pro	Arg	Ala	Xaa
	50					55

&lt;210&gt; 1638

&lt;211&gt; 55

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1699

<221> SITE  
<222> (14)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (18)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (19)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (20)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (29)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (30)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (34)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (35)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (38)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (39)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1700

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1638

Ile	Arg	Xaa	His	Ala	Thr	Xaa	Tyr	Arg	Gly	Xaa	Phe	Cys	Xaa	Arg	Arg
1					5				10					15	

Thr	Xaa	Xaa	Xaa	Leu	His	Ser	Ala	Asn	Val	Thr	Thr	Xaa	Xaa	Leu	Leu
			20					25					30		

Leu	Xaa	Xaa	Phe	Tyr	Xaa	Xaa	Arg	Xaa	Xaa	Ala	Xaa	Val	Asn	Ile	Ser
		35					40						45		

Xaa	Val	Pro	His	Cys	Pro	Ile
	50					55

&lt;210&gt; 1639

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (15)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (54)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1639

Ile	Cys	Pro	Gln	Asn	Pro	Leu	Asn	Pro	Leu	Val	Asn	Leu	Thr	Xaa	Ser
1					5				10					15	

1701

Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu  
                   20                  25                  30

Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu  
           35                  40                  45

Arg Lys Arg Ser Ser Xaa Thr Pro Thr Thr  
       50                  55

&lt;210&gt; 1640

&lt;211&gt; 37

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (32)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1640

Met Cys Val Asp Cys Met Asn Asp Leu Glu Lys Lys Lys Lys Lys Lys  
       1                  5                  10                  15

Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Pro Xaa  
           20                  25                  30

Gly Xaa Pro Xaa Pro  
           35

&lt;210&gt; 1641

&lt;211&gt; 41

1702

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1641

Tyr Val Trp Leu Gly His Phe Val Ala Lys Val Arg Thr Cys Leu Trp  
1 5 10 15

Lys Thr Ser Leu Trp Leu Gly Glu Ser Val Trp Pro Ala Ala Ser Asp  
20 25 30

Leu Cys Arg Val Leu Thr Cys Gln Gly  
35 40

&lt;210&gt; 1642

&lt;211&gt; 99

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (1)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1703

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (95)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1642

Xaa	Pro	Ala	Ala	Ser	Tyr	Leu	Met	Thr	Leu	Met	Glu	Pro	Leu	Ser	Leu
1				5					10					15	

Ile	Xaa	Xaa	Xaa	Leu	Ser	Pro	Pro	Leu	Xaa	Xaa	Ser	Lys	Glu	Asn	His
			20					25					30		

Phe	Asp	Ala	Arg	Ser	Cys	Leu	Xaa	Ser	Xaa	Pro	Lys	Cys	Ser	Cys	Ser
		35					40					45			

Xaa	Pro	Xaa	Pro	Gly	Ile	Ser	Leu	Pro	Arg	Asp	Lys	Ser	Ala	Ser	Glu
	50					55					60				

Ile	Leu	His	Asp	Ser	Leu	Cys	Phe	Gln	Asn	Pro	Gly	Leu	Phe	Cys	Ile
65					70					75					80

Ser	Ser	Phe	Leu	Gly	Pro	Ala	Ser	Cys	Val	Pro	Leu	Lys	Gly	Xaa	Trp
				85						90					95

Ala Lys Thr

&lt;210&gt; 1643

&lt;211&gt; 42

&lt;212&gt; PRT

1704

<213> Homo sapiens

<220>

<221> SITE

<222> (2)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (4)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1643

Lys	Xaa	Pro	Xaa	Asn	Leu	Gly	Lys	Ala	Arg	Leu	Gln	Val	Pro	Val	Arg
1				5				10					15		

Asn	Ser	Arg	Val	Asp	Leu	Arg	Val	Phe	Ile	Tyr	Ile	Asp	Ile	Tyr	Ile
			20					25					30		

Asp	Ile	Tyr	Arg	Tyr	Ile	Tyr	Arg	Tyr	Ile
		35				40			

<210> 1644

<211> 46

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (11)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (26)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (35)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (40)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

1705

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1644

Arg Val Gly Val Arg Leu Ala Gln Val Pro Xaa His Leu Thr Ser Arg  
1 5 10 15

Ser His His Pro His Pro Val Phe His Xaa Arg Leu Lys Ala Thr Met  
20 25 30

Arg Met Xaa His Thr Glu Ala Xaa Met Xaa Xaa Asn His Leu  
35 40 45

&lt;210&gt; 1645

&lt;211&gt; 69

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1645

His Val Arg Leu Lys Pro Ile Phe Ser Pro Phe Phe Leu Leu Phe Ser  
1 5 10 15

Leu Ala Ala His Ile Val Pro Leu Phe Tyr Glu Pro Gln Phe Ser Gly  
20 25 30

Leu Ser Leu Lys Lys Lys Ser Ser Leu Asn Ile Ala Phe Arg Lys Leu  
35 40 45

Leu Phe Leu Asp Lys Lys Ser Tyr Thr Leu Lys Lys Lys Lys Thr Phe  
50 55 60

Ser Arg Lys Ile Tyr  
65

&lt;210&gt; 1646

&lt;211&gt; 78

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)



1706

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (43)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (54)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (68)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (76)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (77)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1646

Ile	Ile	Cys	Phe	Val	Leu	Ser	Phe	Ile	Tyr	His	Phe	Phe	Leu	Tyr	Lys
1				5					10					15	

Ser	Ile	Ile	Ser	Arg	Phe	Leu	Tyr	Tyr	Met	Ile	Asp	Ile	Asn	Trp	Val
			20					25						30	

Ile	Ser	Ser	Arg	Gln	Phe	Val	Phe	Ser	Xaa	Xaa	Pro	Pro	Ser	Thr	Val
			35					40					45		

Ser	Gln	Arg	Pro	Asp	Xaa	Val	Gly	Lys	Val	Phe	Phe	Leu	Arg	Ile	Val
	50					55						60			

Lys	Gly	Ser	Xaa	Gln	Leu	Gly	Leu	Ile	Lys	Ala	Xaa	Xaa	Pro		
65					70					75					

<210> 1647

<211> 58

<212> PRT

<213> Homo sapiens

<400> 1647

1707

Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Ser  
1 5 10 15  
Pro Lys Arg Asn Ser Ser Leu Asp Thr Arg Lys Lys Pro Cys Arg Glu  
20 25 30  
Ser Lys Lys Phe Asn Thr His Ser Arg Pro Lys Ser Ser His Gln Leu  
35 40 45  
Arg Lys Arg Ser Ser Ser Thr Pro Thr Thr  
50 55

<210> 1648  
<211> 59  
<212> PRT  
<213> Homo sapiens

<400> 1648  
Cys Leu Phe Leu Leu Pro Val Met Leu Leu Gln Ile His Ile Ser Arg  
1 5 10 15  
Ser Thr Val Asn Val Ser Thr Ser Arg Gly Thr Pro Pro Ser Thr Leu  
20 25 30  
Ser Val Lys Gly Gln Asn Glu Thr Val Arg Val Lys Gly Thr Gly Arg  
35 40 45  
Lys Phe Ala Cys Leu Gln Val Thr Arg Ile Arg  
50 55

<210> 1649  
<211> 110  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (29)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE

1708

&lt;222&gt; (54)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (66)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (86)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (94)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1649

Val	Pro	Pro	Pro	Val	Pro	Trp	Gly	Gly	Pro	Xaa	Arg	Glu	Gly	Glu	Val
1				5					10					15	

Ser	His	Thr	Lys	Ala	Asp	Ala	Pro	Leu	Val	Gly	Gly	Xaa	Trp	Pro	Gly
			20					25					30		

Lys	Ile	Glu	Gly	Cys	Ala	Gly	Leu	Pro	Leu	Arg	Ala	Ala	Gln	Thr	Ala
		35					40					45			

Leu	Met	Cys	Gly	Gly	Xaa	Ala	Arg	Trp	Val	Arg	Ala	Gln	Glu	Val	Ala
	50					55					60				

Pro	Xaa	Thr	Val	Ala	Asp	Xaa	Leu	Pro	Arg	Val	Pro	Gly	Ser	Ser	Leu
65					70				75						80

Tyr	Pro	Trp	Tyr	Ala	Xaa	Asn	Xaa	Trp	Phe	Pro	His	Pro	Xaa	Ala	Ala
				85					90					95	

Lys	Ser	Leu	Phe	Pro	Trp	Ile	Ser	Gln	Ala	Lys	Leu	Gly	Leu
		100					105						110

1709

&lt;210&gt; 1650

&lt;211&gt; 74

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (28)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1650

Ser Pro Glu Gly Leu Ser Leu Leu Ala Pro Xaa Pro Gly Arg Ala Pro  
1 5 10 15

Ala Gly Pro Thr Pro Leu Arg Gly Gln Cys Gln Xaa Gly Ser Leu Thr  
20 25 30

Gly Ala Val His Leu Ser Asn Gly Asn Ala Gly Val Leu Arg Arg Ala  
35 40 45

Gln Gly Gly Gln Lys Pro Pro Val Glu Gln Lys Gly Lys Ser Ser Leu  
50 55 60

Asp Leu His Phe Gln Tyr Glu Tyr Arg Pro  
65 70

&lt;210&gt; 1651

&lt;211&gt; 83

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (30)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (45)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

1710

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (51)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (52)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (62)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (65)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (67)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1651

Asn	Lys	Gly	Gly	Gly	Arg	Met	Met	Thr	Tyr	Pro	Glu	Val	Leu	Pro	Leu
1					5					10					15

Thr	Ala	Arg	Thr	Gly	Ala	Cys	Ser	Val	Pro	Trp	Glu	His	Xaa	Ala	Gln
			20					25					30		

Leu	Ser	Gly	Val	Gln	Ala	Val	Gly	Ser	Phe	Pro	Asn	Xaa	Ser	Ile	Ser
		35					40					45			

Xaa	Pro	Xaa	Xaa	Leu	Lys	Pro	Val	Gly	Gln	Ile	Ser	Lys	Xaa	Leu	Xaa
	50					55					60				

Xaa	Arg	Xaa	Pro	Phe	Thr	Asn	Pro	Arg	Phe	Cys	Gly	Gln	Cys	Pro	Lys
	65					70				75					80

Gly Val Gly

1711

<210> 1652  
<211> 90  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (11)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (41)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (43)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (54)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (55)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (56)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (76)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (89)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1652  
Phe Phe Phe Phe Leu Asp Val Lys Gly Ile Xaa Phe Gln Arg Leu Leu  
1 5 10 15

1712

Glu Ser Leu Val Tyr Thr Asp Glu Gly Val Arg Cys Cys Phe Pro Ser  
                   20                  25                  30

Glu Ser Ser Ala Ser Thr Glu Ile Xaa Leu Xaa Leu Ile Phe Asp Ile  
           35                  40                  45

Leu His Cys Leu Leu Xaa Xaa Xaa Arg Ser Phe Leu Pro Phe Thr Ser  
       50                  55                  60

Pro Ser Asn Tyr Val Gln Met Cys Arg Leu Leu Xaa Ser Gly Leu Ser  
   65                  70                  75                  80

Pro Lys Ala Leu Thr Leu Gly Leu Xaa Phe  
                   85                  90

&lt;210&gt; 1653

&lt;211&gt; 55

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (40)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (42)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (49)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1653

Lys Leu Trp Phe Val Phe Val Phe Cys Leu Phe His Leu Phe Pro Ser  
   1                  5                  10                  15

1713

Gln Pro Gln Thr Phe Cys Ser Leu Arg Glu Leu Thr Phe Pro Phe Phe  
                  20                  25                  30  
Phe Leu Phe Phe Phe Phe Gly Xaa Leu Xaa Val Xaa Asn Lys Ile Xaa  
          35                  40                  45  
Xaa Ala Ile Lys Lys Lys Lys  
          50                  55

&lt;210&gt; 1654

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (13)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (41)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (53)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (58)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids



1714

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (60)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1654

Val Xaa Ala Thr Asn Leu Pro Ser Leu Val Ile Ala Xaa Cys Ser Xaa

1

5

10

15

Ile Glu Ser Leu Val Pro Leu Leu Ile Trp Pro Gln Lys Pro Pro Asn

20

25

30

Ser Pro Trp Leu Ile Leu Thr Val Xaa Pro Lys Lys Gly Thr Xaa Ser

35

40

45

Leu Gly Pro Leu Xaa Lys Lys Thr Leu Xaa Lys Xaa Asn

50

55

60

&lt;210&gt; 1655

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (17)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1655

Ala Ala Val Leu Gln Thr Ala Arg Arg Ala Arg Ser Ala Cys Arg Leu

1

5

10

15

Xaa Xaa Xaa Xaa

1715

20

<210> 1656  
<211> 24  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (13)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (17)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (19)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1656  
Ala Asp Ile Gln Thr Glu Arg Ala Tyr Gln Lys Xaa Xaa Thr Ile Phe  
1 5 10 15

Xaa Asn Xaa Lys Arg Val Leu Leu  
20

<210> 1657  
<211> 34  
<212> PRT  
<213> Homo sapiens

<220>  
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<222> (10)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (31)

1716

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (34)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1657

Ala Ala Ala Cys Leu Pro Ala Thr Glu Xaa Ser Gln His His Glu Gly  
1 5 10 15

Leu Asp Leu Leu Ser Pro Leu Pro Gly Arg Glu Gly Leu Gly Xaa Pro  
20 25 30

Ser Xaa

<210> 1658

<211> 51

<212> PRT

<213> Homo sapiens

<400> 1658

Cys Lys Gln Tyr Leu Thr Asn Pro Gln Val Leu Asn Tyr Gln Thr Cys  
1 5 10 15

Ile Lys Asn Phe Gly Trp Gly Asp Leu Gly Ala Glu Pro Asn Leu Arg  
20 25 30

Ala Val His Ala Lys Thr Ser Pro Val Lys Ala Asn Tyr Tyr Thr Gln  
35 40 45

Leu Ile Gln  
50

<210> 1659

<211> 166

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (50)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

1717

<222> (53)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (62)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<222> (72)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<222> (84)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<222> (87)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<222> (88)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (95)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (98)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
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<222> (115)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (117)

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<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (118)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

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<222> (122)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (123)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (125)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (132)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (133)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (139)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (144)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (149)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

<222> (160)

<223> Xaa equals any of the naturally occurring L-amino acids

1719

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (162)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1659

Ser Thr His Ala Ser Gly His Ser His Ser Gln Ala Ser Leu Ala Gly  
 1 5 10 15

Ser Arg Val Ala Arg Val Arg Cys Leu Leu Gln Leu Gln Asp Asp Arg  
 20 25 30

Pro Glu Asp Ala Leu Leu Leu Phe Leu Pro Gln Pro Arg Gln Glu Ala  
 35 40 45

Thr Xaa Pro Gln Xaa Pro Ser Arg Pro Ser Arg Gly Pro Xaa Trp Leu  
 50 55 60

Gly Leu Leu Lys Lys Ala Glu Xaa Gly Gly His Pro Ser Gln Glu Xaa  
 65 70 75 80

Pro Gly Trp Xaa Gly Glu Xaa Xaa Glu Arg Arg Pro Pro Trp Xaa Leu  
 85 90 95

Asn Xaa Arg Thr Phe Trp Asn Arg Ile Pro Glu Glu Gln Arg Ala Arg  
 100 105 110

Gly Pro Xaa Leu Xaa Xaa Arg Gly Pro Xaa Xaa Val Xaa Pro Trp Gly  
 115 120 125

Phe Leu Glu Xaa Xaa Pro Gly Lys Glu Ser Xaa Leu Arg Gly Gly Xaa  
 130 135 140

Phe Arg Gly Lys Xaa Leu Phe Leu Ile Lys Ala Lys Leu Gly Ile Xaa  
 145 150 155 160

Phe Xaa Lys Arg Lys Gly  
 165

&lt;210&gt; 1660

&lt;211&gt; 68

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (9)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1720

<220>  
<221> SITE  
<222> (12)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (20)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (21)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (24)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (25)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (29)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (39)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (45)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (51)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (52)  
<223> Xaa equals any of the naturally occurring L-amino acids

1721

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (66)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1660

Ser Pro Gly Leu Gln Glu Phe Gly Xaa Arg Gly Xaa Arg Asn Arg Leu  
 1 5 10 15

Asn Tyr Ala Xaa Xaa His His Xaa Xaa Pro His Arg Xaa Ser Ile Pro  
 20 25 30

Thr His Ala Leu His Ser Xaa Arg Gly Asp Asp Ala Xaa Leu Thr Ile  
 35 40 45

Lys Ile Xaa Xaa Pro Pro Met Val Leu Glu Pro Thr Ser Thr Pro Asp  
 50 55 60

His Xaa Val Asp  
 65

&lt;210&gt; 1661

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (48)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (54)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1661

Leu Asn Ala Asp Thr Leu Met Asn Asp Gln Gln Gln Leu Ser Ala Leu  
 1 5 10 15

Lys Lys Thr Leu Ile Phe Glu Phe Thr Cys Trp Val Pro Gly Ser Asn  
 20 25 30

Gly Gly Lys Arg Pro Leu Phe Ile Lys Arg Gly Pro Pro Phe Xaa Xaa



1722

	35		40		45
Pro	Lys	Asp	Phe	Leu	Xaa
	50		55		60
			Phe	Gln	Ile
			Gly	Lys	Gly
					Thr

&lt;210&gt; 1662

&lt;211&gt; 54

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (19)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (22)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (47)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1662

Thr	Val	Xaa	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Lys	Asn	Leu
1				5				10						15	

Glu	Val	Xaa	Gly	Ile	Xaa	Asn	Leu	Asp	Ile	Xaa	Phe	Gly	Thr	Ser	Asn
			20					25					30		

Pro	His	Ser	Pro	Thr	His	Ala	Gly	Gly	Cys	Ala	Cys	Arg	Thr	Xaa	Leu
		35					40					45			

Thr	Asp	Trp	Trp	Ile	Leu
	50				

1723

&lt;210&gt; 1663

&lt;211&gt; 95

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1663

Ala Arg Glu Lys Leu Cys Val Arg Gly Arg Gly Leu Phe Arg Cys Arg  
1 5 10 15

Val Ser Ser Ser Cys Thr Leu Phe Lys Ser Leu His Trp Arg Asn Ser  
20 25 30

Ala Ile Thr Ser Ser Leu Val Ala Glu Gly Arg Gly Asn Ile His Leu  
35 40 45

Phe Met Pro Val Cys Cys Met Gln Ala Phe Trp Leu Pro Thr Leu Gln  
50 55 60

Gln Asn Asn Cys Thr Asn Ser Leu Val Pro Ile Pro Pro Thr Glu Ser  
65 70 75 80

Pro Gly Ala Thr Val Phe Phe Ala Leu His Cys Lys Glu Arg Asp  
85 90 95

&lt;210&gt; 1664

&lt;211&gt; 100

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (70)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (90)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (91)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

1724

&lt;400&gt; 1664

Val Asn Gln Glu Thr Thr Pro Val Asp Cys Gly Ala Leu Glu Gly Leu  
1 5 10 15

Val Gly Val Asn Leu Pro Thr Pro Tyr Asn Cys Gly Arg Ile Gln Lys  
20 25 30

Ser Leu Ser Phe Tyr Ile His Ser Leu Asp Val Ile Gly Pro Leu Pro  
35 40 45

Pro Ile Ser Leu Arg Cys His Ala Ser Met Gly Ser Gly Val Val Arg  
50 55 60

Lys Asn Lys Arg Arg Xaa Asp Ser Leu Val Met Asp Lys Ile Leu Thr  
65 70 75 80

Thr Val Phe Pro Xaa Gly Ile Pro Tyr Xaa Xaa Phe Asn Phe Phe Phe  
85 90 95

Ser Leu Lys Asn  
100

&lt;210&gt; 1665

&lt;211&gt; 33

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (11)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (18)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (21)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1725

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1665

Ser	Ala	Pro	Gly	Gly	Ser	Cys	Tyr	Ser	Gly	Xaa	Pro	Arg	Val	Pro	Lys
1				5					10					15	

Cys	Xaa	Ile	Gln	Xaa	Asp	Pro	Xaa	Ser	Xaa	Pro	Pro	Cys	Leu	Gln	Leu
			20					25					30		

Val

&lt;210&gt; 1666

&lt;211&gt; 47

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (37)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (39)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1666

Gly	Arg	Val	Gly	Gly	Arg	Val	Gly	Gly	Arg	Val	Gly	Arg	Glu	Pro	Gln
1				5				10					15		

Val	Tyr	Thr	Leu	Pro	Pro	Ser	Arg	Glu	Xaa	Met	Thr	Lys	Lys	Gln	Ser
			20					25					30		

Ala	Glu	Leu	Pro	Xaa	Ser	Xaa	Gly	Phe	Tyr	Pro	Thr	Lys	Ser	Pro
			35				40					45		

&lt;210&gt; 1667

&lt;211&gt; 34

&lt;212&gt; PRT

1726

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (34)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1667

Leu Glu Ile Thr Leu Gln Gly Glu Pro Lys Leu Arg Pro Pro Lys Pro  
1 5 10 15

Glu Arg Ala Thr Leu Glu Gln Leu Lys Glu His Thr Pro Leu Phe Leu  
20 25 30

Pro Xaa

&lt;210&gt; 1668

&lt;211&gt; 41

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (16)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (26)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (35)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (38)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1668

Ile Cys Pro Gln Asn Pro Leu Asn Pro Leu Val Asn Leu Thr Val Xaa

1727

1	5	10	15
Pro Lys Arg Asn Lys Leu Phe Gly His Xaa Glu Lys Thr Leu Tyr Arg			
	20	25	30
Glu Glu Xaa Xaa Phe Xaa Asn Pro Tyr			
	35	40	

&lt;210&gt; 1669

&lt;211&gt; 96

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (77)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (84)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (88)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1669

Gly Arg Ala Leu Pro Gly Arg Val Arg Ala Ala Thr Gly Glu Gly Arg			
1	5	10	15
Thr Phe Val Xaa Asn Gly Thr Val Leu Leu Ala Pro Pro Arg Gly Gly			
	20	25	30
Pro Leu Val Ser Pro Leu Pro Ala Arg Arg Arg Cys Val Trp Glu Gly			
	35	40	45
Val Gly Cys Gly Pro Arg Pro Asp Leu Ala Val Pro Pro Ala Ala Phe			
	50	55	60
Cys Val Ala Gly Ala Gly Arg Arg Gly Pro Leu Thr Xaa Gln Thr Ala			
	65	70	75
			80

1728

Leu Ala Val Xaa Ser Ser Gly Xaa Arg Leu Ala Gly Gly Thr Pro Thr  
85 90 95

<210> 1670

<211> 140

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (50)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

<221> SITE

$\langle 222 \rangle$  (112)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

**<222> (128)**

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

<221> SITE

**<222> (135)**

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1670

Gly Ser Thr His Ala Ser Gly Ser Thr Glu Lys Glu Gly Leu Leu His  
1 5 10 15

Glu Ala Thr Leu Ser Val His Gln Gly Leu Gly Leu Arg Gly Pro Trp  
20 25 30

Ser Ser Cys Ser Ser Pro Ala Pro Pro Trp Met His Cys Cys Arg Ala  
35 40 45

Glu Xaa Pro Leu Pro Gly Pro Ala Leu Gly Phe Leu Glu Thr Ser Phe  
50 55 60

Ser Phe Ala Ile Phe Phe Lys Trp Glu Lys Gly Gly Gln Leu Ser Leu  
65 70 75 80

Gly Lys Arg Gly Pro Ala Thr Cys Pro Ala Trp Ala Pro Glu Pro Ser  
85 90 95

1729

Ser Leu Thr Gly Gln Ser Leu Val Gly Lys Ala Ala Ser Trp Pro Xaa  
100 105 110

Ser Leu Leu Met Phe Leu Val Ser Arg Val Gln Ser Gln Leu Phe Xaa  
115 120 125

Phe Leu Val Val Pro Val Xaa Glu Ala Phe Gln Asn  
130 135 140

&lt;210&gt; 1671

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (20)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (27)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1671

His Xaa Xaa Met Glu Ser Asp Lys Met Val Thr Gly Ser Trp Gly Pro  
1 5 10 15

Arg Leu Ser Xaa His Glu Gly Cys Ser Ala Xaa Cys Ile Ser Val Tyr  
20 25 30

Val Val

&lt;210&gt; 1672

&lt;211&gt; 113



1730

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (7)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (12)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1672

Arg	Xaa	Leu	Leu	Thr	Ile	Xaa	Glu	Ser	Trp	Tyr	Xaa	Cys	Arg	Tyr	Arg
1				5					10					15	

Ser	Gly	Ile	Pro	Gly	Gly	Ile	Pro	Leu	Ser	Pro	Arg	Asp	Pro	Thr	Leu
		20						25					30		

Ala	Ser	Trp	Pro	Thr	Arg	Ser	Arg	Glu	Ser	Leu	Arg	Glu	Arg	Arg	Arg
		35					40					45			

Ser	Arg	Ala	Ala	Ser	Gly	Leu	Gly	Ile	Arg	Pro	Leu	Gly	Pro	Pro	Leu
	50					55						60			

Val	Ser	Arg	Val	Gly	Arg	Asn	Arg	Arg	Leu	Ala	His	Leu	Ala	Trp	Val
65					70					75				80	

Cys	Pro	His	Val	Val	Ile	Val	Gln	Ile	Asn	Ala	His	Ser	Glu	Leu	Ala
			85						90					95	

Val	Tyr	Phe	Leu	Lys	Phe	Asn	Ile	Val	Phe	Val	Ile	Leu	Lys	Tyr	Leu
			100					105						110	

Leu

&lt;210&gt; 1673

&lt;211&gt; 86

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1731

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1673

Pro Ala Phe Asn Phe Asp Pro Leu Phe Phe Leu Phe Val Arg Cys Thr  
1 5 10 15

Arg Leu Pro Ser Cys Phe Ser Leu Leu Ser Cys His Gln Pro Phe Leu  
20 25 30

Leu Gly Gly His Val Leu Gly Lys Arg Pro His Asp Leu Ser Gly Ser  
35 40 45

Thr Gln Cys Leu Arg His Pro Ala Ser Phe Ala Cys Ile Pro Gln Thr  
50 55 60

Ile Ser Leu Ile Leu Phe Thr Ala Ala Asn Leu Ser Leu Val Asp Glu  
65 70 75 80

Thr Val Phe Ile Xaa Leu  
85

&lt;210&gt; 1674

&lt;211&gt; 56

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1674

Ser Asp Tyr Glu Leu Leu Phe Lys Arg Lys Met Leu Phe Ile His Ala  
1 5 10 15

Glu Val Ile Gln Phe Pro Pro Ser Tyr Arg Ser Ile Leu Ile His Pro  
20 25 30

Thr Leu Glu Met Gln His Leu Cys Gly Arg Leu Phe His Lys Pro Pro  
35 40 45

Arg Leu Leu Arg Leu Gly Arg Tyr  
50 55

&lt;210&gt; 1675

&lt;211&gt; 65

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

1732

&lt;221&gt; SITE

&lt;222&gt; (10)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (24)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (43)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1675

Leu	Val	Cys	Ile	Leu	Pro	Lys	Val	Arg	Xaa	Pro	Thr	Leu	Gly	Ile	Thr
1				5					10					15	

Leu	Leu	Ile	Val	Ile	Leu	Val	Xaa	Ile	Leu	Pro	Gly	Val	Met	Tyr	Ser
			20					25					30		

Leu	Lys	Ala	Leu	Asn	Val	Cys	Ile	Ala	Thr	Xaa	His	Gln	Ile	Leu	Asn
		35						40					45		

Gly	Leu	Ser	Phe	Gly	Trp	Asn	Tyr	Lys	Leu	Lys	Lys	Cys	Phe	Ser	Gly
	50					55						60			

Lys

65

&lt;210&gt; 1676

&lt;211&gt; 52

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (44)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1676

Pro	Thr	Glu	Gln	Val	Thr	Leu	Gly	Ile	Thr	Ala	Gln	Ser	Tyr	Ser	Arg
1				5					10					15	

Val	His	Ile	Asn	Asn	Arg	Val	Tyr	Asp	Leu	Asp	Val	Gly	Ser	Gly	His
			20					25					30		

Pro	Asp	Gly	Ala	Ala	Ala	Ile	Lys	Gly	Ser	Phe	Xaa	Gln	Arg	Leu	Lys
		35					40					45			

1733

Ser Tyr Val Ile  
50

<210> 1677  
<211> 40  
<212> PRT  
<213> Homo sapiens

<220>  
<221> SITE  
<222> (1)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (2)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (14)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (26)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (34)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (37)  
<223> Xaa equals any of the naturally occurring L-amino acids

<220>  
<221> SITE  
<222> (39)  
<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1677  
Xaa Xaa Lys Lys Lys Lys Lys Lys Lys Lys Lys Lys Xaa Lys Lys  
1 5 10 15

Lys Lys Lys Lys Lys Lys Gly Gly Arg Xaa Lys Gly Ser Lys Leu Thr

1734

20 25 30

Tyr Xaa Cys Met Xaa Arg Xaa Ser  
35 40

<210> 1678  
<211> 49  
<212> PRT  
<213> Homo sapiens

<400> 1678  
Thr Ala Ala Met Ser Ile Phe Thr Pro Thr Asn Gln Ile Arg Leu Thr  
1 5 10 15  
Asn Val Ala Val Val Arg Met Lys Arg Ala Arg Lys Arg Phe Glu Ile  
20 25 30  
Ala Cys Tyr Arg Asn Lys Ser Ser Ala Gly Gly Gly Leu Trp Lys Lys  
35 40 45  
Thr

<210> 1679  
<211> 51  
<212> PRT  
<213> Homo sapiens

<400> 1679  
Ala Ala Ala Gln Gln Val Val Asp Gln Ala Thr Glu Ala Gly Gln Lys  
1 5 10 15  
Ala Met Asp Gln Leu Ala Lys Thr Thr Gln Glu Thr Ile Asp Lys Thr  
20 25 30  
Ala Asn Gln Ala Ser Asp Thr Phe Ser Gly Ile Gly Lys Lys Phe Gly  
35 40 45  
Leu Leu Lys  
50

<210> 1680  
<211> 41  
<212> PRT  
<213> Homo sapiens

1735

&lt;400&gt; 1680

Ala Phe Asn Arg Ser Gln Arg Gly Ser Cys Ser Ala Thr Tyr Glu Thr  
1 5 10 15

Pro Thr Gln Lys Gln Val Val Tyr Glu Trp Phe Ser Ala Arg Phe Pro  
20 25 30

Thr Asn Val Arg Cys Val Thr Gly Glu  
35 40

&lt;210&gt; 1681

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (2)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1681

Gly Xaa Gly Val Arg Val Asn Val Arg Thr Ser Ala Gly Cys Ser Pro  
1 5 10 15

His Pro Asn Pro Leu Pro Lys Gly Arg Arg Gly Pro Val Thr Gln Phe  
20 25 30

Ala Leu

&lt;210&gt; 1682

&lt;211&gt; 85

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (36)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (64)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

1736

&lt;221&gt; SITE

&lt;222&gt; (71)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (78)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (80)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (85)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1682

Ala	Ser	Asn	Ser	Asn	Tyr	Ala	Leu	Ile	Gly	Ala	Leu	Arg	Ala	Val	Ala
1				5					10					15	

Gln	Thr	Ile	Ser	Tyr	Glu	Val	Thr	Leu	Ala	Ile	Ile	Pro	Thr	Ile	Asn
			20					25						30	

Ile	Thr	Asn	Xaa	Leu	Ala	Pro	Leu	Thr	Ser	Pro	Pro	Leu	Ser	Gln	His
		35					40						45		

Lys	Asn	Thr	Pro	Glu	Tyr	Pro	Ala	Ile	Ile	Thr	Leu	Trp	Pro	Tyr	Xaa
		50					55					60			

Ile	Ile	Phe	His	Thr	Arg	Xaa	Asn	Asn	Glu	Pro	Pro	Ser	Xaa	Leu	Xaa
		65				70				75					80

Lys	Gly	Asn	Phe	Xaa
				85

&lt;210&gt; 1683

&lt;211&gt; 53

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 1683

Val	Gly	Leu	Glu	Ile	Asn	Met	Leu	Ala	Phe	Ile	Pro	Val	Leu	Thr	Lys
1						5					10				15

Lys	Ile	Asn	Pro	Arg	Ser	Thr	Glu	Ala	Ala	Ile	Lys	Tyr	Phe	Leu	Thr
				20					25					30	

1737

Gln Ala Thr Ala Ser Ile Ile Leu Leu Ile Ala Ile Leu Phe Asn Asn  
35 40 45

Ile Leu Ser Gly Gln  
50

<210> 1684

&lt;211&gt; 169

<212> PRT

<213> Homo sapiens

**<220>**

<221> SITE

<222> (146)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

**<221> SITE**

<222> (152)

<223> Xaa equals any of the naturally occurring L-amino acids

 $\langle 220 \rangle$ 

**<221> SITE**

<222> (154)

<223> Xaa equals any of the naturally occurring L-amino acids

**<220>**

**<221> SITE**

<222> (156)

<223> Xaa equals any of the naturally occurring L-amino acids

<220>

**<221> SITE**

<222> (161)

<223> Xaa equals any of the naturally occurring L-amino acids

<400> 1684

Pro Val Ser Ala Lys Lys Glu Lys Lys Val Ser Cys Met Phe Ile Pro  
1 5 10 15

Asp Gly Arg Val Ser Val Ser Ala Arg Ile Asp Arg Lys Gly Phe Cys  
20 25 30

Glu Gly Asp Glu Ile Ser Ile His Ala Asp Phe Glu Asn Thr Cys Ser  
35 40 45

Arg Ile Val Val Pro Lys Ala Ala Ile Val Ala Arg His Thr Tyr Leu  
50 55 60



1738

Ala Asn Gly Gln Thr Lys Val Leu Thr Gln Lys Leu Ser Ser Val Arg  
 65 70 75 80  
 Gly Asn His Ile Ile Ser Gly Thr Cys Ala Ser Trp Arg Gly Lys Ser  
 85 90 95  
 Leu Arg Val Gln Lys Ile Arg Pro Ser Ile Leu Gly Cys Asn Ile Leu  
 100 105 110  
 Arg Val Glu Tyr Ser Leu Leu Ile Tyr Val Ser Val Pro Gly Ser Lys  
 115 120 125  
 Lys Val Ile Leu Asp Leu Pro Leu Val Ile Gly Ser Arg Ser Gly Leu  
 130 135 140  
 Ser Xaa Arg Thr Ser Ser Trp Xaa Ala Xaa Thr Xaa Ser Glu Asp Glu  
 145 150 155 160  
 Xaa Gly Arg Ser Glu His Pro Asp Thr  
 165

&lt;210&gt; 1685

&lt;211&gt; 733

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1685

gggatccgga gcccaaatct tctgacaaaa ctacacatg cccaccgtgc ccagcacctg 60  
 aattcgaggg tgcaccgtca gtcttcctct tcccccaaaa acccaaggac accctcatga 120  
 tctcccggac tcttgaggtc acatgcgtgg tggtaggacgt aagccacgaa gaccctgagg 180  
 tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg 240  
 aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact 300  
 ggctgaatgg caaggagtac aagtgaagg tctccaacaa agcctccca acccccatcg 360  
 agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc 420  
 catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct 480  
 atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga 540  
 ccacgcctcc cgtgctggac tccgacggct ccttcttctc ctacagcaag ctcaccgtgg 600  
 acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggtctctg 660  
 acaaccacta cagcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc 720  
 gactctagag gat 733

&lt;210&gt; 1686

&lt;211&gt; 5

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

1739

&lt;220&gt;

&lt;221&gt; SITE

&lt;222&gt; (3)

&lt;223&gt; Xaa equals any of the naturally occurring L-amino acids

&lt;400&gt; 1686

Trp Ser Xaa Trp Ser

1 5

&lt;210&gt; 1687

&lt;211&gt; 86

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1687

gcgcctcgag atttccccga aatctagatt tccccgaaat gatttccccg aaatgatttc 60  
cccgaatat ctgccatctc aattag 86

&lt;210&gt; 1688

&lt;211&gt; 27

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1688

gcggcaagct ttttgcaaag cctaggc 27

&lt;210&gt; 1689

&lt;211&gt; 271

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1689

ctcgagattt ccccgaatc tagatttccc cgaaatgatt tccccgaaat gatttccccg 60  
aaatatctgc catctcaatt agtcagcaac catagtcccc cccctaactc cgcccatccc 120  
gccctaact ccgcccagtt ccgcccattc tccgccccat ggctgactaa ttttttttat 180  
ttatgcagag gccgaggccg cctcggcctc tgagctattc cagaagtagt gaggaggctt 240  
ttttggaggc ctaggctttt gcaaaaagct t 271

&lt;210&gt; 1690

&lt;211&gt; 32

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1690

gcgctcgagg gatgacagcg atagaacccc gg 32

1740

&lt;210&gt; 1691

&lt;211&gt; 31

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1691

gcgaagcttc gcgactcccc ggatccgct c

31

&lt;210&gt; 1692

&lt;211&gt; 12

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1692

ggggactttc cc

12

&lt;210&gt; 1693

&lt;211&gt; 73

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1693

gcggcctcga ggggactttc ccggggactt tccggggact ttccgggact ttccatcctg 60  
ccatctcaat tag 73

&lt;210&gt; 1694

&lt;211&gt; 256

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 1694

ctcgagggga ctttcccgga gactttccgg ggactttccg ggactttcca tctgccatct 60  
caattagtag gcaaccatag tcccgcccct aactccgccc atcccgcgcc taactccgcc 120  
cagttccgcc cattctccgc cccatggctg actaattttt tttatttatg cagaggccga 180  
ggccgcctcg gcctctgagc tattccagaa gtagtgagga ggcttttttg gaggcctagg 240  
cttttgcaaa aagctt 256

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/05882

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12P 19/34  
US CL : 435/91.1

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 435/91.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
MEDLINE, SCISEARCH, GenEmbl Database

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Database GenEmbl on STN. KELKER, W. 'Sequence of human E-cadherin cDNA', GenEmbl Database, Accession Z18923.1, Version Z18923.1 GI:31074, 04 December, 1992 (04.12.1992), see nucleotide position 456-1007.	1-12, 14-16, and 21 for SEQ ID NO:1
Y	BANERJI, J. A gene pair from the human major histocompatibility complex encodes large proline-rich proteins with multiple repeated motifs and a single ubiquitin-like domain, Proc. Natl. Acad. Sci. USA, 1990, Vol 87, pages 2374-2378, see entire document.	1-12, 14-16, and 21 for SEQ ID NO:2
Y	Database GenEmbl on STN. SKUCE, C. 'Homo sapiens chromosome 20 clone RP4-661I20 map q11.23-12', GenEmbl Database, Accession AL031669, Version AL031669.18 GI:6983365, 11 FEBRUARY, 2000 (04.02.2000), see nucleotide position 63147-63482.	1-12, 14-16, and 21 for SEQ ID NO:3
Y	Database GenEmbl on STN. RAKER, V.A. 'Human SnRNP core protein Sm D2 mRNA, complete cds', GenEmbl Database, Accession U15008, Version U15008.1 GI:600747, 10 December, 1994 (10.12.1994), see nucleotide position 23-479	1-12, 14-16, and 21 for SEQ ID NO:4
Y	Database GenEmbl on STN. ELLER et al. 'Cellular retinoic acid-binding protein [human, skin, mRNA, 735 nt]', GenEmbl Database, Accession S74445, Version S74445.1, GI:241541, 7 May, 1993 (07.05.1993), see nucleotide position 7-733.	1-12, 14-16 and 21 for SEQ ID NO:6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

03 May 2000 (03.05.2000)

Date of mailing of the international search report

26 JUL 2000

Name and mailing address of the ISA/US

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Michael Woodward

Telephone No. (703) 308-0196

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/05882

## C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Database GenEmbl on STN. SHARMA et al 'Human class III alcohol dehydrogenase (ADH5) chi subunit mRNA, complete cds.', GenEmbl Database, Accession M30471, Version M30471.1 GI:178133, 5 October, 1995 (05.10.1997), see nucleotide position 2-2277.	1-12, 14-16, and 21 for SEQ ID NO:8
Y	Database GenEmbl on STN. ABEDINIA , M. 'Human transketolase (TKT) mRNA, complete cds.', GenEmbl, Accession U55017 M86521, Version U55017.1 GI:1297296, 6 May, 1996 (06.05.1996), see nucleotide position 687-2038.	1-12, 14-16, and 21 for SEQ ID NO:10

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/05882

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-12, 14-16, and 21 for the first 10 sequences in Table 1

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/05882

**BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING** This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1.

Group 1, claims 1-12, 14-16, and 21 in so far as they are drawn to the first ten polynucleotides of Table 1 (pages 12-118), protein, vector, gene, method of making host cell, recombinant host cell, method of producing the protein of SEQ ID NO:61.

Groups 2-209, claims 1-12, 14-16, in so far as they are drawn to the next 208 polynucleotide groups (any four sequences constitute a single group) and encoded proteins listed in Table 1.

Groups 210-418, claim 13, in so far as they are drawn to isolated antibodies that bind to any one group of the next 208 polypeptide sequence groups listed in Table 1.

Groups 419-627, claims 15-16, in so far as they are drawn to a method of making any one group of the next 208 polypeptide sequence groups listed in Table 1.

Groups 628-836, claim 17, in so far as they are drawn to a method of treatment by administration any one group of the next 208 polypeptide sequence groups listed in Table 1.

Groups 837-1045, claim 18, in so far as they are drawn to a method of diagnosing a pathological condition by determining a presence or absence of a mutation in any one group of the next 208 polypeptide sequence groups listed in Table 1.

Groups 1046-1255, claim 19, in so far as they are drawn to a method of diagnosing a pathological condition by determining the presence or amount of any one group of the next 208 polypeptide sequence groups listed in Table 1.

Groups 1256-1465, claims 20 and 23, in so far as they are drawn to a method of identifying any one group of the next 208 polypeptide sequence groups listed in Table 1, and the product produce by the same method.

Group 1466-1675, claim 22, in so far as they are drawn to a method of identifying an activity in a biological assay by expression of any one group of the next 208 polypeptide sequence groups listed in Table 1.

The inventions not elected, do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT rule 13.2, the non-elected groups lack the same or corresponding technical features for the following reasons: Group 1 corresponds to the first invention wherein the first product is the polynucleotide, and the first method of use is the method of using the polynucleotide to make the protein, and the protein. Note, there is no method of making the polynucleotide. Each of groups 2-1675 does not share the same or corresponding special technical feature because, each group is drawn to different polynucleotide or encoded protein. Additionally, each of groups 210-1675 does not share the same or corresponding technical feature because, each group is drawn to different compounds or methods of using any of the fifty polynucleotides and encoded proteins listed in Table 1. The Authority therefore considers that the several inventions do not share a special technical feature within the meaning of PCT Rule 13.2 and thus do not relate to a single general inventive concept within the meaning of PCT Rule 13.1.